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The Markets of South America and the War

European Loans Have Been Cut Off, But Our
Manufacturers Have a Great Opportunity—
We in Turn Must Buy in South America

BY CHARLES M. PEPPER*

The broad fact about the markets of South America is that the United States has the opportunity to supply commodities which heretofore have been supplied by the European belligerents. There will be a deficiency, especially in iron and steel products. Germany and Belgium, for the time being, are entirely shut off from supplying South America. Even England, though it may keep the ocean lanes open for its commercial fleet, will find its South American trade dislocated.

WAR CUTS OFF SOURCES OF CAPITAL

While this is the general situation, there is a limitation on the extent to which the United States may profit at once by the deficiency in supplies from Europe. This is the diminished ability of most of the South American countries to buy. The United States, by well-directed effort, may legitimately increase its permanent trade with South America as the result of the war, but too much should not be expected at the outset.

The probability is that the demand for material for harbor and other public improvements, for railroads and for construction enterprises of a public nature will be lessened. The war has paralyzed the ability of the

South American countries to borrow money in Europe, and European loans have been the basis of their public improvements and their construction of railroads. Some of these countries were just emerging from commercial crises, due largely to economic causes, and were preparing to refund old loans and secure additional ones.

Brazil was negotiating for a loan of \$100,000,000 in London, with some prospect of success. This money cannot now be obtained. Brazil, in fact, has issued an additional volume of paper currency to meet the stress.

Brazilian railroad enterprise, as represented by the syndicate which has been carrying on a comprehensive plan of extensions and of new lines, was financed in London, Paris and Brussels. The Balkan wars interfered with the readiness of this group to advance further funds, but the prospect was said to be improving when the present war broke out. In these circumstances about all that can be expected will be to keep going the investments already made.

With the Brazilian government restricted in its opportunities for borrowing in order to carry on public improvements, and with private enterprise on a large scale compelled to restrict its activities in railroad building,

it will be seen that Brazil is not likely to be a large buyer of certain commodities during the present year. This does not mean any lessening in the value and volume of its permanent market.

ARGENTINA RECOVERING FROM LAND SPECULATION

Argentina had been getting on its feet after the monetary crisis which followed the riotous land speculation. Argentine public credit always has been high, and there were some intimations that as con-

*Mr. Pepper, who was for eight years prior to June, 1913, foreign trade expert of the State Department at Washington, contributed eight notable articles to *The Iron Age* dealing with the possibilities of increasing the trade of the United States with South American countries. They were written in the course of a tour through South America and appeared in the following issues: The Panama Canal and South American trade was treated in a separate article October 16, 1913. The various countries were then taken up in the following order: Peru, November 13, 1913; Chile, January 1 and February 5, 1914; Argentina, March 5; Brazil, April 2; Bolivia, May 7; Colombia, June 4.

ditions improved the effort to float a new government loan, which was abandoned a year ago, might be renewed. The province of Buenos Aires, which was in the market for a railroad loan, was also understood to be on the point of renewing negotiations.

None of these loans can now be floated and some big private enterprises which were dependent on foreign capital will have to be postponed. Argentina, however, is in a position to profit by the war, since the demand for its grain and beef will be increased and higher prices undoubtedly will be obtained. With this source of income assured, Argentina's purchases abroad may not be appreciably lessened on account of the war.

FINANCES OF CHILE AND PERU

Chile's financial condition has been frequently described as sound, but not sane. That is, the country has abundant resources to meet its financial obligations, but is apt to be reckless in incurring these obligations. Chile will maintain her credit abroad, and will pay all her debts, but she is not likely to get fresh loans with which to carry on public improvements.

The European market for the nitrate fertilizers is upset for one season at least. This means that the nitrate companies will be compelled to restrict their output and the government will find its reve-

countries is set forth in order that a conservative view may be had of the prospect of the South American market for the United States. American manufacturers and exporters, not familiar with these conditions, might assume that South America would buy next year and this year just as much as it bought last year. If the totals show a falling off in certain lines they might draw misleading conclusions as to the real value of the market and abandon it. This would be a grave mistake.

NEEDS IN MINING AND AGRICULTURAL MACHINERY

Having stated some of the drawbacks, it is proper to describe some of the favorable prospects. The purchase of mining machinery is not likely to be altered because mining development goes forward under the most unfavorable conditions. Building and household hardware are not apt to be interfered with, since the demand for these is not affected by international imbroglios. The physical reconstruction of the great city of Buenos Aires will go right on, and the requirements for structural steel, which are so large a factor in its reconstruction, will continue to be large.

Agricultural machinery will continue to be wanted in Argentina and Brazil in as large quantities, at least, as heretofore. Textile machinery, which has been in demand in Brazil and in a lesser degree in Peru and Argentina, will also be required.

Imports of Iron and Steel Products, etc., Into Brazil by Countries of Origin, 1912

Articles	Total	United States	Great Britain	Germany	France	Belgium
Ammunition	\$2,178,121	\$451,294	\$21,756	\$1,369,956	\$197,561	\$488,328
Fire arms	2,280,796	572,302	103,249	1,111,675	31,837	3,912,337
Bicycles	258,786	37,116	991,130	41,287	331,761	331,014
Railroad cars	7,382,069	1,915,701	271,653	268,616	431,786	1,470,795
Asles and wheels	1,328,604	924,045	317,873	1,526,018	320,209	186,216
Motor cars	5,368,650	110,530	112,434	569,563	1,375,764	483,508
Motor car accessories	1,265,430	2,060,944	241,369	49,997	537,636	...
Electrical machinery	4,811,052	250,047	178,465	576,564	86,941	...
Electrical cable	579,885	55,044	337,214	379,110	...	...
Electrical insulators	204,388	14,032	59,051	91,131	...	397,021
Cutlery	1,193,060	1,020	1,540,600	143,478	1,290,737	70,511
Enamelled ware	485,325	328,934	2,776,668	1,784,057	354,519	...
Galvanized corrugated sheets	2,060,072	114,879	2,379,798	2,239,642	888,227	345,870
Bars, rods, plates and sheets	1,797,435	1,871,629	529,843	569,338	...	...
Locomotives	3,749,149	425,218	459,850	116,920	80,627	122,518
Motors and stationary engines	1,450,513	409,458	333,753	507,533	...	...
Agricultural machinery	702,013	84,233	179,056	...	...	...
Industrial machinery	5,758,613	230,799	2,776,668	1,784,057	354,519	564,262
Other machinery	10,071,038	3,556,371	1,537,651	661,834	299,377	...
Nails, screws, etc.	547,469	117,401	143,478	360,880	25,509	469,137
Rails, joints, etc.	9,384,650	1,868,840	751,474	1,344,151	2,071,438	3,318,764
Steel bars and rods	944,537	94,276	518,335	81,098	...	...
Structural material	3,099,101	196,928	648,710	1,223,603	384,630	...
Tubes, pipes, fittings	3,973,039	419,678	1,988,125	885,359	354,521	...
Tools	3,311,443	694,927	1,537,651	661,834	299,377	...
Tel. poles, bridge and fence material	1,478,680	328,901	391,635	466,263	78,623	...
Stills, boilers, etc.	716,563	77,836	105,297	963,594	...	...
Sewing machines	2,548,510	1,563,131	118,906	86,698	...	...
Hydraulic pumps and parts	365,636	92,776	1,112,935	285,042	...	...
Tin plate and sheets	1,421,649	271,410	65,115	1,403,714	...	...
Copper wire	1,293,638	851,550	227,990	...	...	344,381
Other wire	2,880,837	823,876	...	...	...	...

nues from the export tax on nitrates seriously diminished, and all this signifies that for a year at least Chile will be buying less material for construction enterprises than during the last few years.

Peru was seeking a loan to refund existing loans and meet current obligations when the war broke out. It had no great public improvements under way, and no private construction enterprises of magnitude. Its demand for material therefore may not be materially lessened, but an increase cannot be looked for.

Peru has the gold standard, which helps it in economic and financial crises. The cable reports have stated that the government has authorized the banks to issue checks based on gold to meet the stringency caused by the inability to procure the loan that was sought. Credits may not suffer, but Peru, for the next year, is likely to remain stationary as a buyer of manufactured articles.

The financial and economic situation in these

The same is true of flour mill machinery. The market which recently has been developed in Argentina for woodworking machinery will not be lessened. Tools are always in demand.

IRON AND STEEL PRODUCTS—CUSTOMS VALUATIONS

The nature of the market of the leading South American countries in detail, as relates to iron and steel products, is exhibited in the customs figures of imports by articles and countries of origin. Unfortunately, however, the statistics are not based on the same system as in the United States. The classifications of the different governments are in no way uniform, each country has its own practice in this regard, and none of them follows classifications similar to those which prevail in the United States.

Exports of the different commodities from the United States to South American countries can be obtained from the statistics given in the Govern-

ment publication, "Commerce and Navigation." A cautionary signal, however, is necessary because of the confusion which usually arises from trying to harmonize them with the import statistics of the countries to which the commodities are consigned. Aside from insurance and freights there are other factors which make for uncertainty.

Most of the South American countries have the system of "afors," or fixed valuations of different commodities in the customs tariff classifications. Under this practice the value as shown in the manifest given by the exporter to the authorities in the United States may not be the same as the value under the customs classification of the importing country. A typewriter shipped to Argentina may show on the manifest at \$50, while the Argentine customs may require it to be valued at \$65, or vice versa. The same principle applies to numerous other commodities from threshing machines to cash registers.

What chiefly concerns the American manufacturer is the commodities which are now imported from European countries, and which may, under the present disturbed conditions, be shifted to the United States if proper effort is made to obtain the trade.

Though the classifications are not similar, it happens that some light may be obtained on this subject from the import statistics of the different South American governments. The nature of the Brazilian market can be gathered from the accompanying table for 1912, which is the latest year for which full statistics are available.

Argentine imports of iron and steel and kindred products by countries of origin may be exhibited in a different manner. The Argentine Department of Commerce and Industry, in one of its statistical summaries of Argentine international trade, made use of the system of percentages in showing the principal articles of importation exceeding \$1,000,000 and principal countries of origin. As in the case of Brazil, the year 1912 was taken as the one for which the fullest statistics were available. That may be considered an average year. The statistical exhibit is as follows:

Percentage of Imports of Iron and Steel Products Into Argentina by Countries of Origin, 1912

Product and Total Imports	United States, per cent.	Great Britain, per cent.	Germany, per cent.	France, per cent.	Belgium, per cent.
Machinery (various kinds), \$6,987,917	16.2	30.0	37.1	16.4	4.2
Pig and sheet iron, \$6,516,677	6.5	10.4	39.6	...	42.0
Galvanized iron, \$6,583,572	22.7	66.0	6.2	...	4.6
Automobiles, \$5,346,149	10.5	...	15.9	43.6	8.4
Steel rails, \$5,272,960	14.5	43.7	26.4	...	14.5
Railroad material, \$5,195,286	2.6	82.8	4.7	...	7.5
Railroad freight cars, \$3,950,791	14.6	69.5	...	...	13.5
Railroad passenger cars, \$1,234,447	9.1	90.9	...	...	...
Tramway material, \$1,514,311	5.0	31.6	34.5	...	27.4
Iron columns and beams, \$3,395,198	3.0	...	56.2	15.1	22.5
Wrought iron, \$2,852,878	11.6	42.0	13.7	...	27.8
Parts of machinery, \$2,764,317	40.5	23.4	23.2	2.2	1.5
Parts of carriages and automobiles, \$1,579,178	4.3	23.3	27.0	25.8	...
Reapers, \$2,811,249	71.7	1.7	...	...	...
Threshing machines, \$1,572,054	80.0	11.8	8.0	...	...
Locomotives, \$2,228,045	...	84.4	13.4	...	2.2
Galvanized wire, \$2,088,847	31.7	12.3	51.0	...	4.5
Iron manufactures, \$1,428,677	15.6	22.1	32.3	10.3	8.8
Galvanized iron pipe, \$1,341,502	17.7	74.7	6.4	...	...
Iron pipe not galvanized, \$1,214,474	4.4	64.5	20.3	2.9	5.4
Wheels and axles, \$1,302,619	9.0	...	...	...	...
Steel sleepers, \$1,188,964	11.0	42.3	34.7	...	10.4
Motors of various kinds, \$1,183,924	55.3	27.6	7.5	...	...
Bolts and nuts, \$1,100,499	16.0	37.8	14.7	17.3	13.1
Tin plate, \$1,074,469	33.3	64.9	...	...	...
Material for bridges, \$1,033,855	6.7	77.8	11.0	...	4.0

Uruguay, which belongs to the east coast group of countries, is not a heavy purchaser of iron and

steel products. Given in metric tons, the quantity from all countries as exhibited in 1912 and 1913 ranges from 62,000 tons to 65,000 tons. Machinery varies from 12,000 to 15,000 tons. The United Kingdom, Germany and Belgium all share in the Uruguay market for iron and steel products with the United States.

CHILEAN TRADE

Chile, on the west coast, as has frequently been explained, in the past has been a very good purchaser of iron and steel products on account of its railroad building and its harbor and other public improvements. It is also a good purchaser of mining machinery.

Detailed statistics by classes and countries of origin of Chilean trade are not yet available. Something may be learned, however, from the broad general grouping of which the import statistics are made up. A large portion of iron and steel products come under the head of "mineral products," while "machinery" answers for the balance. Under this general grouping some conclusion may be drawn from the following tabular summary of imports for 1913:

Articles	Total	United States	United Kingdom	Germany
Mineral products	\$22,275,078	\$4,428,199	\$6,147,821	\$8,119,413
Machinery	14,961,485	3,333,894	4,542,633	5,491,779

Belgium has a large trade with Chile in mineral products, the total for the year given having amounted to \$2,497,000, made up principally of steel rails.

UNITED STATES MUST BUY MORE FROM SOUTH AMERICA

There is a forgotten side to this matter of South American trade. American manufacturers and exporters who are searching for wider markets overlook that some of the countries may also be hunting for expanded markets for their products in the United States. In the present situation it is quite essential that the market for South American products in the United States be enlarged since much of the European market is shut off.

The raw material which may be wanted for the iron and steel and allied industries need in no way be interfered with by the war. The only question is to what extent additional raw products may be absorbed by the industries of the United States.

Manganese exists in Brazil in superabundance, and it can hardly be assumed that the European war interferes with the ability to supply it. In an article on Brazil, published in *The Iron Age* on April 2, I explained the richness of the Brazilian manganese deposits, the facility with which they can be mined and the adequate transportation facilities which now exist. If the iron and steel industry of the United States is embarrassed for lack of Brazilian manganese, it is simply a case of holdup by the Brazilians.

The scare of the automobile industry over a prospective shortage of rubber, because of the war, may or may not be justified, although the supply from the Belgian Congo is undoubtedly in danger, and there may be interference with shipments from the Straits Settlement. But the Amazon has an abundant reserve supply. The hundreds of boats which a few months ago were tied up at Para are doubtless now busy. The jump in the price of Amazon rubber ought to help Brazil through its economic crisis, since the drop in price was one of the prime causes of the trouble.

Chilean nitrates have been used by the manufacturers of explosives in the United States, and it

may be that since the war is spreading and explosives will be in greater demand, larger quantities of the nitrates can be absorbed, regardless of their utility as fertilizers.

SMELT BOLIVIAN TIN CONCENTRATES HERE

Bolivian tin is a raw material that, by every reason of sound industrial policy, ought to be smelted in the United States. The tin concentrates which heretofore have been brought down to Antofagasta and shipped through the Straits of Magellan, or around the Horn, can now come up through the Canal and reduce the war risk. With Hamburg shut out entirely, and with some danger attending shipments of tin concentrates to Liverpool, the beginning of the tin smelting industry on the Atlantic coast should not be far distant.

Chilean copper heretofore has gone largely to England and Germany. The low grade ores from the Braden mine, near Santiago, went to England. Most likely means will be found for absorbing larger quantities of Chilean copper in the United States.

Since the Bethlehem Steel Company's Tofo iron ore mines in Chile were acquired in order to supply the Bethlehem works, there will be none of this traffic to divert from other countries.

Peruvian copper has been so largely absorbed in the United States that there will not be large additional quantities to be taken by this country, yet there will be some increase.

These facts are cited briefly because it is always well to remember that in supplying products to South America, which heretofore have been supplied by the European belligerents, it is likewise necessary for the United States to absorb some of the South American products which they have absorbed.

A final hint may be given on the general subject. Ample data have been gathered by the Department of State and by the Department of Commerce regarding the details of South American trade. The reports of the Consuls to the State Department give much useful information regarding trade conditions. The reports of the Department of Commerce give a vast amount of technical data. What the American manufacturer and exporter should do is to digest this official information carefully and not seek to gulp it down at one swallow.

Iron and Steel Institute Meeting

The autumn meeting of the Iron and Steel Institute was to have been held at Paris, September 17 to 22, and extensive preparations had already been made when the war broke out, the trips including one to Nancy and the principal iron and steel works of French Lorraine. It is now given out by the council of the Institute that all arrangements for the autumn meeting have been abandoned. Announcement will be made as soon as possible of plans for holding the meeting in England.

The Longmead Iron Company's property at Conshohocken, Pa., has not been sold to Emery P. Day, according to a statement received from Lewis N. Lukens, receiver of the company. Mr. Lukens says that the property is still being offered for sale either as a whole or in suitable parcels.

In spite of the general depression the Aberthaw Construction Company, Boston, reports more work under way than ever before on its books. For several weeks past each payroll has been higher than the preceding week, now being the highest in the history of the company to date.

Certain Oxy-acetylene Apparatus Condemned

At a recent meeting in Chicago of the International Acetylene Association, resolutions were adopted condemning apparatus for oxy-acetylene work which provides for the generation and self-compression of acetylene or of oxygen to a pressure greater than 15 lb. per square inch. The resolutions, which are here subjoined, followed a report by the association's oxy-acetylene committee, of which Augustine Davis, president Davis-Bournonville Company, was chairman, and were presented by a committee of which Professor Pond, University of Pennsylvania, was chairman.

J. M. Morehead, chemist and engineer, Union Carbide Company, is president of the association; A. F. Jenkins, Milburn Company, Baltimore, is vice-president, and A. Cressy Morrison is secretary and treasurer. The directors are: J. T. Earl, Davis Acetylene Company, Elkhart, Ind.; A. D. Meeker, Brauer Acetylene Company, Marshalltown, Iowa; Hyman Offutt, Model Acetylene Company, Louisville, Ky.; R. W. Gorham, Colt Company, New York; M. Kirchberger, M. Kirchberger & Co., New York, and W. A. Cochrane, John Simmons Company, New York.

The resolutions are as follows:

Whereas, the National Board of Fire Underwriters have established regulations regarding the proper method of generation of acetylene, and installation of apparatus for use in connection with the oxy-acetylene blow-pipe, and for recharging cylinders, and

Whereas, these regulations are in harmony with such regulations as are in force throughout the world and with the laws of all civilized nations, and

Whereas, these rules absolutely prohibit the generation and self compression of acetylene to a pressure greater than 15 lb. per square inch, the wisdom of such prohibition having been demonstrated by scores of fatal accidents, against which no safeguards are known; Therefore,

Be It Resolved: That this association, of its own knowledge and from its own experience, condemns such methods and earnestly warns all manufacturers, users and prospective purchasers of such apparatus to immediately discontinue such manufacture and use.

This association further throws its whole weight of knowledge and accumulated experience into the recommendation that public officials charged with the safeguarding of life and property immediately prohibit the use of such self-compression generators, working at higher pressure than 15 lb. per square inch, wherever found.

Whereas, numerous accidents, some of which have been fatal, have come to the attention of this association, resulting from the simultaneous generation and self-compression of oxygen, by heating chlorates; Therefore,

Be It Resolved: That this association condemns such practice as seriously detrimental to our industry, and hazardous to life and property. This association further advises that chlorates should not be used for the generation of oxygen, except in connection with an efficient washing system and gas holders operating under inconsiderable pressure, and that oxygen be compressed only by means of compressors especially constructed for oxygen.

The Graton & Knight Mfg. Company, Worcester, Mass., which has heretofore had 16 branches in as many leading cities, is endeavoring to give its customers still better facilities for quickly obtaining their belting requirements. It has opened its seventeenth branch at 301 Magazine street, New Orleans, La., where a complete line of leather belting, lace leather, belt dressing and belt cement will be carried. This branch is also equipped to handle all kinds of belt repair work promptly and satisfactorily. This emphasizes the complete service organization of the G & K system.

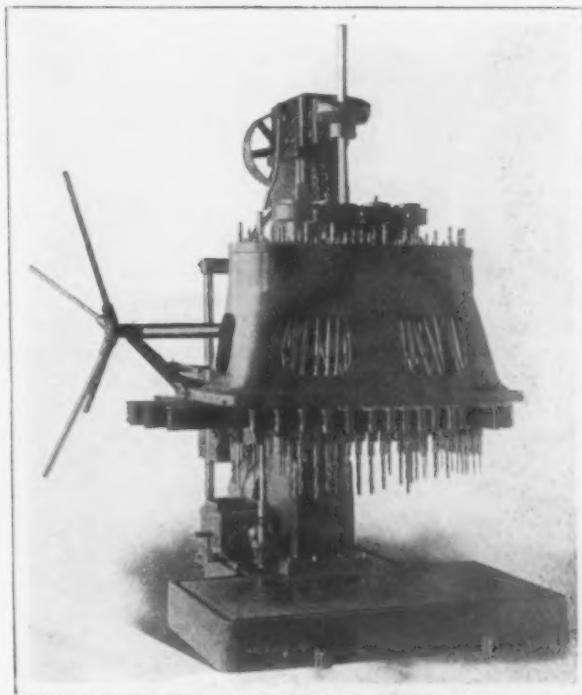
The Andrews Mfg. Company, refrigerating machinery, Dayton, Ohio, has filed a petition of involuntary bankruptcy in the United States District Court at Cincinnati.

A Heavy Multiple Drilling Machine

A large heavy drilling machine designed to provide a large number of adjustable spindles over a large drilling area has been added to the line built by the National Automatic Tool Company, Richmond, Ind. The special field for which this machine is intended is the drilling of automobile crankcases and work of a similar nature, the machine illustrated being one furnished to the motor manufacturer for drilling six-cylinder crankcases in one operation. From 2 to 44 adjustable spindles can be mounted in the machine and it is also possible to equip it with cluster boxes which increase the maximum number of spindles to 90. Two sizes of heads are furnished, both of which are the same depth, 16 in., the widths being 30 and 44 in. respectively. One of the most important features of the machine is the independent drill speeds in the head which gives two independent speed changes to each spindle for each of the three changes obtained in the gear box, an arrangement, which, it is pointed out, provides approximately the correct speed and feed for each size drill that comes within the range of the machine.

The machine is mounted on a heavy base having an oil channel for catching the overflow. There is a screen pocket in the channel through which the cutting lubricant must flow to enter the storage tank. From here it is pumped back to the tools and this arrangement is relied upon to prevent chips and other substances from finding a lodgment in the oil supply pipes. Two independent pumps are employed by the lubricating system, one for oiling the machine and the other for delivering the cutting compound to the drill points. The column is heavy and rigid and is of box section. The heads furnished with the machine can be equipped with various combinations of adjustable spindles and cluster boxes for drills ranging from $\frac{1}{8}$ in. to 1 in. in diameter. Power feed and a pilot arm to facilitate its easy and rapid advance and return are provided for the head. The power feed may be tripped either automatically or by hand. Three chains supporting a counterweight within the column balance the head and additional sectional counterweighting in the rear of the machine is employed to compensate for the variations in the number of arms used.

The spindles are made of steel, which is hardened and ground, and have ball thrust bearings at the lower end and lock nuts at the upper to take up any wear that may develop. The spindles are made to carry either straight or Morse taper shank drills as required. Individual flexible oil tubes deliver the cutting lubricant to each drill point when the machine is working on steel or aluminum. The bronze bearings of the drill spindles have vertical adjustment to compensate for the variation in drill lengths. This adjustment is easily and quickly secured by simply loosening one nut which is always accessible irrespective of how close the spindles may be grouped. With this construction it is unnecessary to move any of the arms from the position in which they are set, as the spindle adjustment is a patented construction holding the bearing rigidly to the end of the arm and the arm may be moved to cover any layout within the range of the head. The universal joints used are composed of only five pieces and the design is not dependent on cross pins or screws. There are three independent drill feeds which permit the use of any feed with any of the three double drill speeds that are available in the head, all of these changes being made if necessary while the machine is running. The feed box is located at the base of the column and the gears,



A Large and Heavy Multiple-Spindle Drilling Machine for Automobile Crankcase and Similar Work Having a Capacity for 90 Spindles

which are of large diameter and run at moderate speeds, are cut from solid metal. A small tray convenient for holding tools is provided by the cover of the feed box.

A single pulley drive is provided so that the machine may be belted directly to a lineshaft or individual motor drive applied if that is desired. The driving pulleys are of large diameter with wide faces and are mounted on roller bearings. The speed box is located at the top of the column and three changes are provided by a sliding gear transmission. Any of these speeds are obtained by pushing the hand lever to the corresponding position and this number of changes is doubled by sliding gears in the head. This also provides independent variations in the speed of the several spindles. These changes can also be secured while the machine is running.

American Wire Gauge in Customs Service

WASHINGTON, D. C., August 25, 1914.—The Treasury Department, in a formal order from Assistant Secretary William P. Malburn to the appraiser of the port at New York, has authorized the adoption of the American wire gauge (Brown & Sharpe) as the standard gauge for use in the customs service, in so far as it may be applicable. The communication of Mr. Malburn, however, declares that the tariff act of October 3, 1913—the present tariff law—eliminated the term "wire gauge" from the tariff schedules, with one exception, and substituted therefor diameters expressed in decimals of an inch. The single exception appears in paragraph 114 in relation to steel strips. Under previous tariff laws the department had authorized the use of the Birmingham gauge for the gauging of all wires, but not strips. This, however, was nullified by the elimination of wire gauge in the present tariff act in connection with wires.

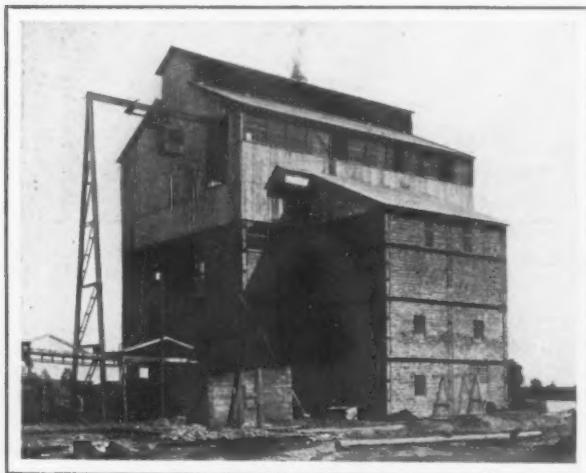
It is reported that the Great Northern Iron Ore Properties will not operate all the iron mines now under lease to the Oliver Mining Company, when the latter's lease expires January 1, 1915. The Tod-Stambaugh interests have secured a lease of the Dean mine at Buhl and other companies are negotiating for some of the Hill mines.

The Helfenstein Large Electric Furnace

Recent Achievements in the Production of Pig Iron in Sweden—Value of the Waste Gases in Steel Production

BY C. VAN LANGENDONCK

One large electric furnace takes up, of course, much less room than several small ones. Dr. Helfenstein, of Vienna, who has been interested in the electric furnace problem for several years, in drawing a parallel between small furnaces with a capacity of from 1000 to 1500 hp. and large closed furnaces, estimates that the capital expenditure for



Building Containing the Helfenstein Electric Pig Iron Furnace at Domnarfvets, Sweden

the former, including buildings and electric apparatus, amounts to about \$21 to \$22 per hp., while for the latter it does not exceed \$12.25 to \$13.70 per hp. Large and closed furnaces require also fewer attendants.

The consumption of materials for the apparatus also may be estimated at no more than one-half or one-third of the corresponding consumption of small furnaces; in addition to which, with closed furnaces, the conductor cables are protected against heat and smoke, which makes them more durable, while it also contributes to reduce the loss of tension in the secondary conductor. As regards the output, this is not much higher for large closed furnaces than for the others if the loss of energy arising from the employment of higher voltage is not taken into consideration. In regard to the utilization of the energy, the small furnaces have now been brought to such perfection that nothing more is to be expected. The protection of the electrodes against the air by means of the charge itself is, however, of great importance, and this represents a compensation for the greater consumption of electrodes on account of the higher voltage employed.

Large units have the further advantage that the working and supervision is facilitated. It is also possible to operate with large variations of the supply of energy by the aid of certain arrangements in the transformers; furnaces designed for 10,000 hp. can thus be kept running for months with a load of only 4000 hp., without any risk, either to the furnace or to the process from a technical point of view.

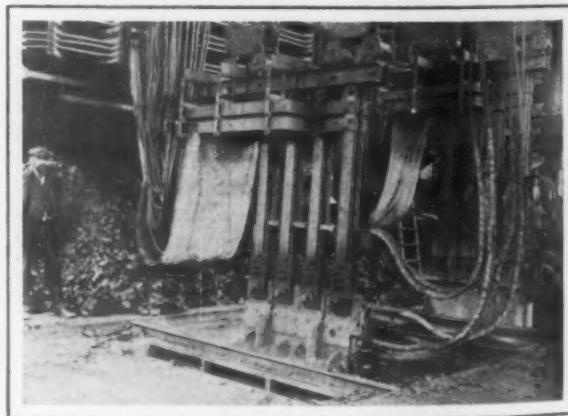
The utilization of the furnace gases is possible only in large furnaces, for in small furnaces the

supply of gas is so small and so irregular that it is a matter of great difficulty to recover gas of a sufficient good quality to be utilized.

Dr. Helfenstein has erected his first furnace for the manufacture of electric pig iron direct from iron ore at the Domnarfvets Iron Works in Sweden. A view of this is given in one of the illustrations. The fundamental principle of this furnace is based on the experience gained by the author since 1906, when for the first time he succeeded in introducing electric furnaces with up to 12,000 hp. for the manufacture of carbide and ferroalloys.*

The electrodes are placed in a vertical or hanging position, this being the only one technically adaptable to large furnaces. The question of closing the top of such a large furnace is a serious problem depending mainly on the three following points: 1. Durability of the furnace cover or roof. 2. Utilization of the gas. 3. Continual charging.

As regards the roof, the solution was found in a very simple construction. This consisted of water-cooled partitions, which were placed between the electrodes, and which serve two purposes, supports for the arches and as charging hoppers. In the latter the adjustable electrodes are hanging freely, surrounded by the charging material and underneath the roof the partitions form gasification chambers, which make an easy collection of the gases possible. These gasification chambers are, with the aid of nozzles, connected with a common gas pipe for the removal of the gases. This pipe is placed alongside the furnace itself as shown in one of the illustrations. The tightening of the opening around the electrode is affected by the charge itself, and the work is conducted in such a way that the furnace is always kept under a gas pressure, so that small gas flames are burning above



Helfenstein Electric Furnace Charging Floor with the Electrodes in the Furnace

the roof, which show that no air is being admitted to the furnace.

An important feature is that no shaft has been employed for the materials, as the main object has been to make the construction as plain and simple as possible. The furnace is in a way an exper-

*The *Iron Age* for June 19, 1913, contained an illustrated article on the Helfenstein furnace and the experience in making calcium carbide and ferrosilicon.

mental one, from which the furnace gases are drawn from a point as near as possible to that of their development. It is, however, by no means impossible that shafts may be employed for other furnaces in the future. The furnace, which has been working satisfactorily from the very start, was designed for a capacity of 12,000 hp. and the conducting cables were dimensioned accordingly, although it turned out that in the long run it was impossible to get this amount of energy because the power station at Domnarfvets is provided with generators the number of periods of which is abnormal. The generators are working with 62 periods, which for large quantities of energy causes a phase-displacement that far exceeds the permissible figure for a load of 12,000 hp. It was therefore decided to employ from 6000 to 8000 hp. only, and it turned out that with this load (120 volts between the phases and 26,000 amperes per electrode bundle), it was possible to limit the phase-displacement to 0.8.

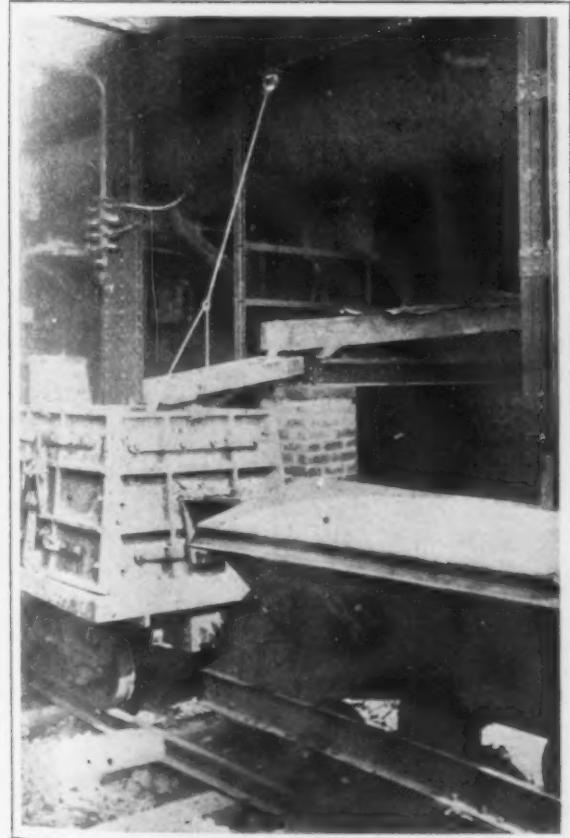
The maximum output of pig iron per 24 hours has been 65 tons, while the output per month varied between 1200 and 1600 tons. With charcoal as a reducing material, the average consumption of energy and materials has been as follows:

Consumption of energy per ton of pig iron—2000 kw-hr.

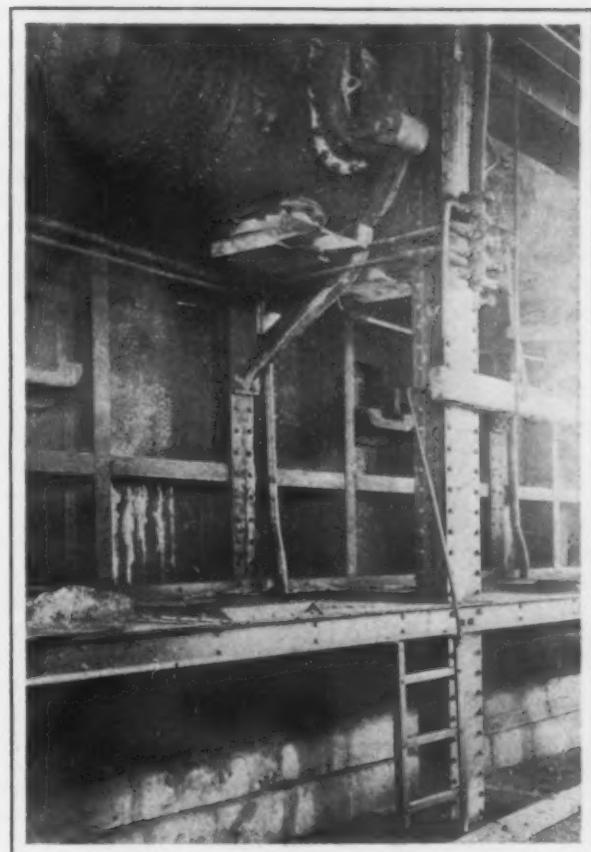
Consumption of charcoal per ton of pig iron—6 to 8 cwt.

Consumption of electrodes per ton of pig iron—15½ lb.

The value of the furnace gases has varied between 2800 and 3000 calories per cubic metre of gas. From this it may be seen that the results as regards the consumption of energy are not so favorable as those achieved in the Electrometals furnace, and the same may be said as to the consumption of charcoal. The consumption of electrodes is about the same as in the Electrometals furnace, for it can be safely assumed that the consumption can be brought down to 11 lb. per ton of pig iron.



Arrangement for Tapping Slag from the Helfenstein Electric Furnace



Gas Pipe at Top Conducting the Waste Gas from the Helfenstein Furnace to the Steel Department

The furnace has, however, on the other hand, certain advantages as compared with the Electrometals furnace, which are as follows:

1. The capital expenditure is considerably lower.
2. The furnace gases possess a considerably greater value, as they are equal to 2600 to 3000 calories per cubic metre, while those in the Electrometals plant have a value of only 2300 calories.
3. The whole process can be much better controlled and supervised, and the furnace worked much more easily. These large furnaces can, for instance, be started much more quickly than the large shaft furnaces, and it has been demonstrated that even after a stoppage of two to three days the furnace can be started and have the full load on in the course of 10 to 15 minutes, and after a few hours the tapping can take place quite normally. It is of great importance that additional materials for improving the charge be added to it close to the melting zone, because the effect will then be almost immediate, while it may take hours before such admixtures are able to reach the melting zone in a furnace with a high shaft.
4. A pulverized ore can be employed without the working of the furnace being hampered in any way, and it need scarcely be pointed out that this is one of the greatest and most important advantages of the whole system.
5. The number of attendants required for the working of the furnace is very small: only seven men were needed.
6. The furnace permits coke to be employed as a reducing material, and this is one of the most important points in the problem of the electrical production of pig iron.

With charcoal the furnace can easily be worked with 70 volts per chase, while this figure with coke must be reduced to 50 to 55 volts per chase. This is explained by the fact that coke is an excellent conductor. The development in this direction is not to be regarded as settled, and it is thus quite probable that the voltage can be raised considerably with

coke as the reducing medium. Operating with coke requires a higher density in the electrodes on account of the lower voltage and the higher weight of the ore per unit of volume.

The second condition for the employment of coke is a speedy removal of the furnace gases. Low shafts are consequently the only ones that can be considered for such furnaces, because the furnace gases then will have to pass through only a thin layer of the charge. This has, however, the drawback that the reducing power of the gases is imperfectly utilized. The consequence is that a gas rich in carbon monoxide, CO, will be produced, while the consumption of energy and of coal will increase. It has been proved that the consumption of energy has risen to 2400 kw.-hr. per ton of pig iron, while the consumption of coke amounted to 6 to 6½ cwt. As regards the consumption of electrodes, this was kept on the same level as when charcoal was employed.

In ironworks which are only occupied with the manufacture of electric pig iron, the most natural solution of the gas question would be to connect the main furnace with rotating furnaces, so that the iron ore would be subjected to a pre-reduction by the aid of the furnace gases before entering the large furnace proper. This would, of course, effect a great saving in the consumption of energy, coke and electrodes per ton of pig iron produced. Secondly, it can be used for open-hearth furnaces. The furnace gases at Domnarfvets are now employed in this manner, and the gas pipes from the large electric furnace are conducted directly to the steel department.

There is, so far as is known, no apparatus in existence at the present time, which is capable of producing such a pure carbon monoxide, CO, as the electric furnace, and it is produced in the large units in such quantities and with such regularity that there ought to be great possibilities for a proper utilization of this excellent element. This gas is no doubt of far too good a quality to serve as ordinary fuel, and if judged by its purity and also the easy manner in which it enters into chemical combinations, its real function in the future ought to be to serve the chemical industry on a large scale.

A Michigan Tonnage Tax on Copper, Iron Ore and Coal

The executive and legislative committee of the Michigan State Grange, the farmers' organization, which met at Lansing August 12, adopted a resolution requesting the Legislature to impose a tonnage tax on all copper, iron ore and coal produced in the State. The rates named are a quarter of a cent per lb. on copper; 2 to 5c. per lb. on iron ore, according to grade, and 2c. per ton on coal. Twenty-five per cent. of the amount collected is to be returned by the State to the counties where the tax is paid. In the event of the Legislature's failure to impose the tax, the proposition is to be placed before the people for a vote through the initiative adopted at the 1913 session of the Legislature.

The largest armory in the world, it is claimed, is now being built in New York City for the Eighth Coast Artillery, at Kingsbridge road and Jerome avenue. It will extend for 375 ft. on Jerome avenue and 600 ft. on Kingsbridge road, covering an area equal to 90 city lots, and its superstructure requires 8000 tons of steel. The roof arches have the greatest span of any in the world. Only one building, one of those at the Chicago Exposition, ever had a greater and this has since been destroyed. The roof will be of fireproof J-M built-up asbestos roofing on the flat portions and J-M asbestos ready roofing on the steeper parts.

The Gasteam Engine for the Ford Motor Company

The new power plant being built by the Ford Motor Company for its Highland Park, Detroit, Mich., factory, will be a combination gas and steam plant, equipped with steam boilers, gas producers and regenerators.

The Hooven, Owens, Rentschler Company, Hamilton, Ohio, is building the prime movers. There will be four "gasteam" units, so called. Each engine will consist of a two-cylinder gas engine arranged in tandem and also a tandem compound condensing steam engine. These two different types of engines will be connected to one shaft similar to the arrangement employed in a cross compound steam engine. Electric power will be developed by direct connecting on the engine shaft a generator of 3750-kw capacity. Each engine is rated at 6000 b.h.p.

This combination gasteam engine has been adopted to secure the economy of a gas engine and the reliability of a steam engine. With the combination type, the engine is not supposed to be put in service, unless there is a half load or more, hence the gas side will always be fully loaded. There has been no attempt made to govern the gas side, other than in case of over speeding. The steam side will do all the governing and take care of all the load fluctuations. In case of trouble on the gas side, the steam side can pull the entire load with a late steam cut-off.

The two gas cylinders of engine will be of the four-cycle double-acting type with water cooling. Each cylinder will be 42 in. in diameter and will have a stroke of 72 in. The tandem compound condensing steam unit will have a 36-in. high-pressure cylinder and a 68-in. low-pressure cylinder and a 72-in. stroke. The low pressure cylinder will be connected to a surface condenser, which in turn will be placed in a closed heating system. The vacuum will be regulated to correspond to atmospheric temperatures and during the winter months the vacuum will be reduced to about 18 in. and the entire amount of circulating water will be pumped through all the factory buildings, which are heated by hot water. Superheated steam will be used with a pressure of 175 lb. and the high-pressure cylinder will be equipped with poppet valves while Corliss valves will be employed on the low-pressure cylinder.

The attempt will be made to absorb all the rejected heat from the gas side or as much as is possible. Exhaust from the gas engine will be conducted into a steam superheater located in the steam line between high and low-pressure steam cylinders, thus utilizing waste gases for reheating the high-pressure exhaust steam. Part of the exhaust gases are shunted through the jacket of the high-pressure steam cylinder, to offset any steam heat loss in that cylinder. The exhaust gases are then conducted to the boiler feed-water heater. Feed water for the heater is secured from the water used for cooling purposes in the gas cylinder jackets, where it is brought up to a temperature of from 150 to 180 deg. This is finally raised to a temperature of about 250 deg. in the heater by means of the exhaust gases as mentioned.

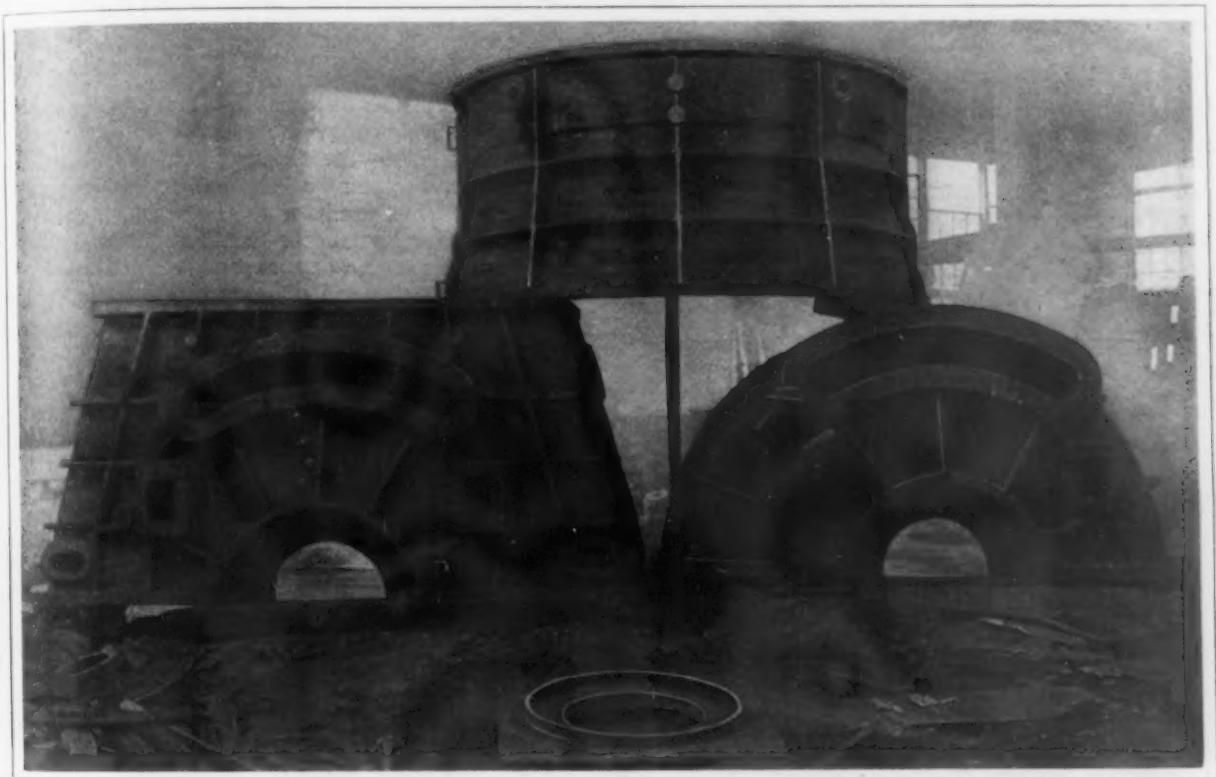
This installation, while not only unique, is based on results of operation of a Hooven, Owens, Rentschler gas engine installed by the Ford Company some time ago. This unit was of 6000-hp. capacity.

Rapid Production of Turbine Castings

An order for five large cast-iron turbine castings was recently completed by the Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., in a short space of time. The order, which was placed by the Fore River Ship Building Company, Quincy, Mass., called for the delivery of the castings within five weeks from the time the patterns were received. As a matter of fact, all the castings were shipped

Casting No.	Tensile strength, lb. per sq. in.	Transverse strength, lb. per sq. in.	Deflection, in.
1.....	34,910 36,824	3,560 3,990	0.1562 0.1718
2.....	37,627 36,223	3,850 3,680	0.1562 0.1875
3.....	38,760 39,800	3,720 3,620	0.1875 0.1400
4.....	35,500 38,917	3,490 3,530	0.1562 0.1718
5.....	34,281 36,620	3,400 3,640	0.1562 0.1875

It is stated that the fracture of the test bars showed a close grain and graphitic carbon broken



A Portion of an Order for Five Large Steam Turbine Castings Which Were Completed and Shipped in 20 Days from the Time the Patterns Were Received

in 20 days after the patterns were received, and two in 16 days.

The castings were made to conform to the specifications of the Argentine Naval Commission and were inspected by them. Before the actual molding could be started loam plates and special rigging had to be made. The castings ranged in weight from 21,935 to 32,415 lbs. Patterns for four of the castings were received on July 5 and the work of molding was begun three days later in the case of three of the castings and on July 11 in the case of the fourth. The pattern for the fifth casting was received July 13 and the molding was begun on the same day. The pouring of the castings was done between July 14 and 21, and by the time the pouring of the last casting was begun three of the castings had been inspected and two shipped. The last two castings were inspected on July 23 and one of them was shipped on the same day, while the other followed two days after.

Two ladies were required for each casting and transverse and tensile test bars were cast from each. The bars for the transverse test were cast 1 in. square and were tested in the rough state, while the tensile bars had a diameter when cast of 1 1-4 in. and were turned down to 3-4 in. in diameter before testing. In making the transverse test the bars were placed on supports 12 in. apart. The following table gives the results of a series of physical tests made on the bars:

up into very small particles. The metal machined well. There was a strong curl to the chips from the tool and the piece took a high degree of finish.

A Pressed All-Steel Leg for Work Benches

The New Britain Machine Company, New Britain, Conn., has developed a new steel patented bench leg which is intended to meet a wide range of factory conditions. It is suitable for shelf and bin construction, and can be readily swept around, and, it is pointed out, does not interfere with locating steam pipes back of it and can be readily changed to a new location. One of the features is a longitudinal stringer allowing the legs to be placed as far apart as 8 ft. center to center.

The legs are of U-section with the U's facing each other. This enables the underneath shelving supports to be put in between the flanges of the leg and securely retained in place. The stringer, it is emphasized, adds to the rigidity of the back portion and prevents deflection and also assists in preventing end sway. It is pointed out the further stiffness is given by the back board which is screwed to the face of the upright in the rear and serves as a screen to prevent work from being pushed off the bench. The separation of the front and rear portions of the leg tends to stiffen the bench against end sway by bolting through the back piece of the stringer and the bench leg with a through bolt.

The Heilman Machine Works, Evansville, Ind., is now in the hands of Henry P. Benninghof, receiver, as the result of proceedings before the local Circuit Court August 14.

Iron-Ore Output at the Styrian Erzberg

A Unique and Extensive Deposit in Austria—How Large Amounts of an Excellent Ore Are Mined by Hand

BY OSKAR NAGEL

One of the largest and most unique iron deposits of the world is the Erzberg, or ore mountain, in the northern part of Styria, Austria, with a reserve of 206,000,000 tons of rich ore and an additional reserve of 157,000,000 tons of ore containing less than 25 per cent. iron. The ore is a carbonate of iron. The open work at these mines has been carried on, at a constantly increasing scale, since the seventh century and will be carried on for several centuries more. The manual work of former times is being more and more replaced by machine work, with a consequent decrease in the cost of production.

The Erzberg has the shape of a regular large

operations, except for blasting and transportation. An advantage of this method is the possibility to regulate the output in accordance with the market conditions and to increase it very considerably by simply placing the gangs at a smaller distance from each other.

The operations on these floors are performed as follows: Electrically driven drills—electric power being supplied to the Erzberg from the blast-furnace gas power plant at the base of the mountain (Eisenerz)—are used for the bore-holes, which are then filled with dynamite. Blasting is done at fixed hours, three times a day, and about 11 tons of rock are broken per pound of dynamite used. The big



The Erzberg or Ore Mountain in Northern Styria, Austria

cone and is made up of three kinds of veins, each several yards in thickness; veins of carbonate of iron, containing 38 per cent. of iron, yielding, after calcination, a product containing 45 per cent. of iron; veins of a limestone containing about 8 per cent. and more of iron and finally veins of a dolomitic limestone. The veins of carbonate of iron amount, in weight, to about one-half of the entire mountain.

One of the illustrations gives a good idea of the Erzberg, while another shows the floors or platform-levels on which the open work is carried on in a uniform manner, so that the mountain is gradually and uniformly peeled off. There are 60 of these floors each having a height of 40 feet and about the same width.

The natural consequence of this method of mining is a working front of immense extension, about 20 miles. The disadvantage caused by this long front, on which in summer time 3500 men are employed, is the impossibility of mechanical work and the necessity of employing manual labor for all

lumps are then broken down by hand to about 8-inch size and the iron ore is picked out by hand work from the limestone. While the latter is transported to the dump on suitable dump cars moving on rails laid all along the working front, the ore is shipped, depending upon the elevation at which it was mined, to one of the following railway stations, all of which are within the ore deposit: Prebichl, 3600 feet elevation; Erzberg, 3210 feet elevation; or Eisenerz, 2100 feet elevation. The ore from the upper part of the mountain (summit 4700 feet elevation) goes to Prebichl and from here to the famous steel works at Donawitz, Styria; the ore from the middle part of the mountain goes to station Erzberg and is shipped to Donawitz or to any other of the nearby iron works, owned by the Alpine Montan Gesellschaft, which is the exclusive owner of the Erzberg deposit. The ore from the lowest part of the mountain is shipped to Eisenerz, where it is calcined and passed through the blast furnaces of Eisenerz. There are two up-to-date blast furnaces at this place, each of a capacity of 450



Mechanical Mining at the Base of the Erzberg

tons per day. All of the furnace gas is purified by the simple and excellent system of Schwarz (Dortmund) and used for power generation. Ten per cent. of the production of the lowest part of the Erzberg is shipped to the Boehler works. The new ore bin at Eisenerz has a capacity of 70,000 tons of ore.

While on the floors of the Erzberg rather primitive methods of working are followed, because of the difficulty of employing suitable machinery at

such a large extension of the working front, a thoroughly modern method of production is used on the broad base of the mountain. Here a great flat area is worked by modern mechanical methods. After blasting, the ore is lifted and charged into the ore cars by means of bucket dredges of which there are three, one being shown in an illustration. The ore is transported to a large breaker, built by the Humboldt Machine Works, Kalk, near Cologne, and the broken ore is concentrated by being passed



The Mining Floors or Platform Levels of the Austrian Erzberg Where Hand Operations Are Conducted

over Robin belts, during which passage the limestone is picked out. If, as sometimes happens, the broken rock contains more limestone than ore, the receiving bins below the Robins belts are switched in such a manner that the ore is picked out, while the limestone remains on the belt and is conveyed to the dump. One-third of the total production of the Erzberg is produced by these dredges, two-thirds by hand work on the floors. The dredge-work is about 35 per cent. cheaper than the hand work, a considerable saving, notwithstanding the fact that a miner on the Erzberg gets only 5 crowns (\$1) per day. The daily ore production in summer amounts to 10,000 tons.

The following figures show the growth of production on the Erzberg since 1875:

Year	Tons	Year	Tons
1875.....	300,000	1900.....	1,140,000
1885.....	520,000	1910.....	1,700,000
1895.....	750,000	1913.....	1,950,000

The composition of the pig iron obtained from this ore is as follows:

	Per cent.
Carbon	3.5—4
Manganese	2.5—3.8
Silicon	0.3
Sulphur	0.04

The ore is practically free of sulphur and contain 0.01 per cent. of phosphoric acid and 2 to 3 per cent. of manganese.

A Power Crane for Automobile Trucks

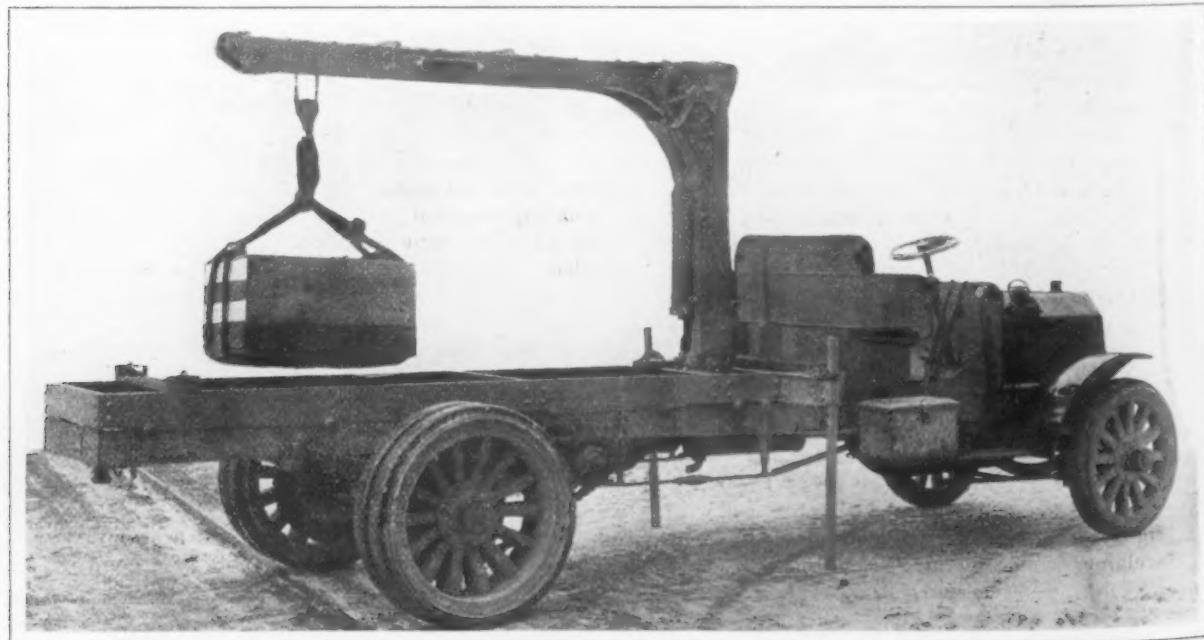
For handling heavy loads frequently carried by motor trucks when they are out on the road, the Brown Hoisting Machinery Company, Cleveland, Ohio, has designed and built a special type of pillar jib crane. While, of course, this crane can be used for handling the load before the truck starts out on its trip, it is not relied upon exclusively for that work, as there are shop and yard cranes for bringing the load to the truck or elevated platforms from which the load can be rolled on the truck. This crane is intended for power operation from the engine of the truck, although it can also be operated by hand.

As will be noticed from the accompanying illustration, the crane is of the pillar jib type. The pillar is located in the center of the chassis directly behind the driver's seat, while the jib is con-

structed of two channels with the flanges turned in. The crane trolley is equipped with four wheels and runs in and out on the lower flanges of the channels, being moved by a hand chain and sprocket wheel. The steel pillar casting is bolted to the chassis and is equipped with thrust roller bearings to give easier rotation. The crane and its load can be pushed to either side by hand, and outriggers which are supported on wrought-iron pipe are provided for use when the load is too great for the chassis. A further protection against overloading is provided by the reinforcement of the chassis with a structural steel frame, as illustrated.

The hoisting shaft is vertical and runs from the top of the crane through the steel pillar down to the center of the chassis, where it is connected to the main hoisting shaft that receives power from either the transmission shaft or a countershaft through roller chains working on sprocket wheels. An intermediate idler shaft is provided to reduce the speed of the engine to the proper rate for hoisting and lowering the load. A single jaw clutch on the transmission or the countershaft provides for the bringing of the crane mechanism into play. A double jaw clutch which is operated by lifting or lowering the lever shown directly behind the driver's seat is provided for the main shaft and throws either one of two bevel gears into mesh with the gear fastened to the vertical hoisting shaft for raising or lowering the load. A bevel gear that meshes with another secured to a horizontal shaft on which there is a chain sprocket wheel is located at the top of the vertical hoisting shaft. From this sprocket wheel the hoisting chain runs out along the jib to the trolley and from the trolley wheels over the sheave in the bottom block, being finally dead ended on a pin in the end of the jib. The dead end at the hoist sprocket wheel falls into an open box located on the crane mast. A safety lowering device is provided to prevent the lowering of the load without having the engine connected to the crane.

The Cincinnati, Hamilton & Dayton has ordered 30 Mikado and 5 Pacific type locomotives from the Lima Locomotive Corporation, Lima, Ohio. The Cleveland, Cincinnati, Chicago & St. Louis is definitely reported to be inquiring for 11 switching locomotives.



A Recently Developed Power Crane for Use in Handling Heavy Loads To and From Automobile Trucks

HORIZONTAL MILLING MACHINE

A Combination Boring and Drilling Tool Equipped with Duplex Control

The Niles-Bement-Pond Company, 111 Broadway, New York City, has developed a horizontal boring, drilling and milling machine with duplex control. The machine, which is of the elevating spindle type, is symmetrical throughout with respect to the spindle axis, thus permitting the operator to stand on either side and have all the controlling levers within convenient reach. While designed for heavy boring work, it is emphasized nevertheless that it is capable of use on work where a high degree of accuracy is required. The feature that is perhaps the most striking about the design is the location of the spindle saddle within the post, which makes the symmetrical construction about the spindle axis possible.

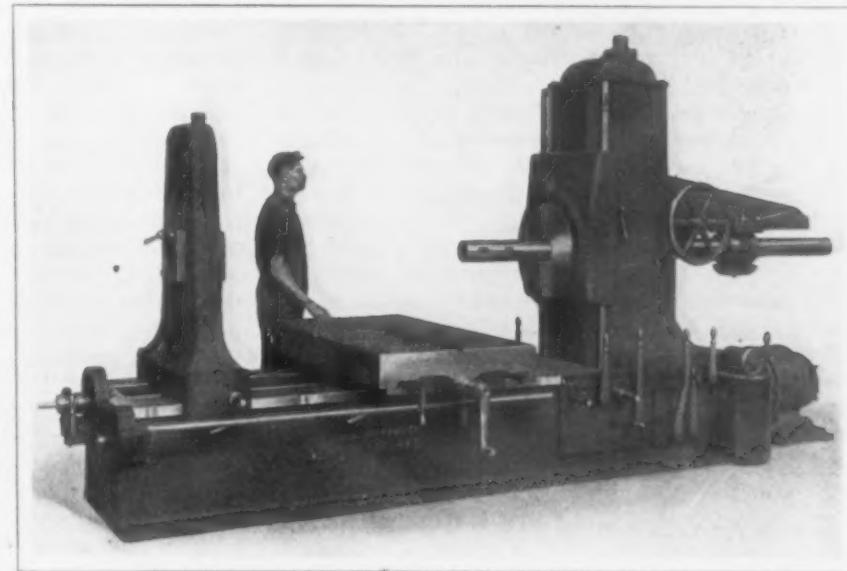
The bed is a cored-out box casting which is made very wide at the top to give the large bearing surface for the table saddle. In addition to the broad supporting flanges at the bottom of the bed, it is braced by internal cross ribs. The top of the bed is entirely closed with a view to prevent chips from falling inside where the driving, feed and traverse gears are located. Large cover plates on both sides of the beds can be readily removed to give access to the gears.

The table, which in the standard size is 33 in. wide and 60 in. long, has a large working surface with T-slots for holding the work. It stands on a broad saddle that is long enough to support it at the extreme position of its travel and is gibbed to it with square locks having adjustment for wear. Power cross feeds for milling and rapid adjustment are provided for the table and the saddle is adjustable along the bed by power through a screw in the center between the tracks of the bed or by hand. Square locks having adjustment for wear provide a means for gibbing the saddle to the bed. The table has a travel across the machine of 48 in.

The spindle, which is $4\frac{1}{2}$ in. in diameter, slides in a long sleeve that in turn revolves in removable bearings, the main one having a taper adjustment to compensate for wear. The spindle is driven at from 5 to 150 r.p.m. through two large spline keys set into the sleeve and engaging with keyways in the spindle. It is fed and rapidly traversed by a screw in the saddle horn. There are six changes of feed provided for each of the spindle speeds and the amount of the feed is independent of the change in the speed and is always per revolution of the spindle. The front portion of the spindle saddle has long bearings on V-tracks planed on the faces of the column. This construction is relied upon to give a rigid alignment of the spindle when the saddle is clamped for boring or sliding vertically for milling, and the back pressure due to boring tends to assist in maintaining the alignment instead of distorting the entire post structure. Vertical power feeds for milling and also power

traverse are provided, the motion being transmitted through a vertical screw which is connected by gearing to a similar screw in the outboard post. Thus the spindle saddle and the outer bearing always move in unison. The driving gear for the spindle is inclosed within the saddle, a portion extending outward and being exposed for use as a face plate.

The spindle column is of box form, open through the center but connected at the bottom in one continuous casting. A cap, which is tongued and



A Recently Developed Horizontal Milling, Drilling and Boring Machine Equipped with Duplex Control

grooved to the column, keeps the two members in place and internal ribbing tends to resist torsional strains. On the front of the column are planed V-tracks for the saddle traverse. The sides of the tracks are unequal, the faces toward the outside of the column being broad to give a liberal bearing surface for the saddle, while the inner faces at approximately right angles to the others are relied upon to resist side thrusts. The outboard column is made in two parts. The lower portion is adjustable along the bed to which it is gibbed, while the upper part is bolted and doweled to the lower, thus enabling it to be removed when long pieces of work are being handled and easily replaced. To avoid disconnecting any of the gearing when the post is removed, provision is made for disconnecting the vertical lifting screw from the remainder of the mechanism.

The machine is driven by 10-hp. direct-current, adjustable-speed motor with a range of 3 to 1. If alternating current only is available, a four-speed motor having a range of 600 to 1800 r.p.m. is recommended. In addition to these drives it is possible to operate the machine by a cone pulley and counter-shaft and a single pulley or a constant-speed motor with a speed box, but on account of the additional gearing required the speed box drive is not recommended.

If desired a facing head which may be either attached to the face plate gear or fastened on the boring bar can be supplied as well as an additional work support. The facing gear has automatic radial feeds by adjustable fingers and a star wheel. The additional work support consists of a comparatively narrow casting which extends across the bed and can be adjusted on it. The height is the same as that of the work table and a T-slot is provided in the top surface for clamping the work.

SOUTH AMERICAN TRADE

The Prospect for Enlarging American Machinery Sales with Our Southern Neighbors

BY WILLIAM M. BENNEY*

With the great manufacturing nations outside of the United States engaged in war, many of the other nations of the world find themselves affected in two ways—deprived of markets for the greater part of the goods which they have to export and cut off from sources of supply for most of the manufactured supplies which they need. This is particularly true of the countries of the South American continent.

Many writers have seized upon these conditions as affording to the manufacturers of the United States a great opportunity for at once enlarging their markets and securing the lucrative foreign trade which they have been urged for many years to work hard to obtain. Undoubtedly, never before in the history of this country has the apparent opportunity for securing at once a large expansion of our foreign trade been so great. To a large degree this trade is now seeking the manufacturer. Humanity as well as self-interest calls to the American manufacturer to use every effort possible to meet the requirements in food supplies and manufactured goods so much needed by the countries of South America and other neutral nations.

INTERNATIONAL EXCHANGE MARKET

But while these facts are patent to all, many have overlooked or ignored the necessity for providing means for liquidating the oversea business now apparently opened to the American manufacturer. In normal times, a draft on London would be the instrument which would effect a settlement of transactions between business houses in any two countries of the world; or a bill could be executed which would be easily negotiable in the London money market. Now London is no longer able to meet its own engagements in gold. Drafts on the world's financial center are no longer honored. Transportation may be provided, ship owners may be willing to take the risks of sailing to any ports, insurance companies may establish moderate rates, but until the exchange market is once more adjusted it will be impracticable to keep the wheels of international commerce in satisfactory motion.

Fortunately our new banking law is now effective, giving our national banks the privilege of establishing foreign branches, the country itself is in healthy condition and American manufacturers were never so well able to look after foreign trade as at present so far as their own position is concerned. Forces are at work to overcome the difficulties alluded to, which again will be materially affected by the outcome of the first great military and naval clashes in Europe. Co-operation on the part of manufacturer, banker, shipowner, insurance company and statesman is now needed and all are energetically working to overcome the obstacles to commerce which are on a scale and of a character never before encountered.

POSITION OF OUR MANUFACTURERS

As far as American manufacturers are concerned they are now prepared to supply nearly all classes of manufactured articles the world needs. American machinery in general has an excellent reputation abroad, but outside of a very few lines the

American machinery manufacturer has never been adequately represented in foreign markets. Up to a recent period the industrial growth of the United States has been so rapid as to keep him reasonably well employed at home, and to sell machinery abroad is not so simple a matter as the marketing of hardware and tools. Now with all eyes attracted to export trade as never before and particularly to South American opportunities, what are the prospects for American machinery in general in the countries to the south of us?

THE ACTIVITIES OF SOUTH AMERICA

In the first place, the 10 republics of South America cannot be classed as manufacturing countries. Their 50,000,000 inhabitants are primarily engaged in agricultural and pastoral pursuits and secondarily in the exploitation of forest and mine. Nevertheless, while essentially agricultural, pastoral or mining countries, the people of South America have developed many small manufacturing industries for the supply of local requirements, and in recent years the more progressive countries—notably Brazil, Argentina and Chile—have by high protective duties and other measures encouraged the development of manufacturing enterprises on a larger scale.

As a result, we find in Brazil at the present time a respectable textile industry, about 140 cotton mills utilizing 40,000 hp. Woolen mills are also growing in number in southern Brazil, and the manufacture of silk and linen has been started. Considerable progress has also been made in the manufacture of boots and shoes on a factory scale. Sugar production is also an important industry. In fact, textiles, sugar and boots and shoes are the most important of Brazil's manufacturing enterprises. Other industries of considerable importance are the drying of meats, beer brewing, making of bags, manufacture of matches and hats, preparation of tobacco, tanning, making of furniture and manufacture of pottery, perfumery, chocolate and confectionery. But in most of these enterprises the establishments are very small ones. The 15,000 miles of railroads of Brazil necessarily maintain machine shops for repair work, and considerable machinery is also imported for the tramways, electric power plants, docks, garages and foundries.

The Argentine government lends encouragement to manufacturing enterprises by high protective duties. The industries so far established that are of importance in more than a local sense are wine factories, meat refrigerating plants, sugar mills and refineries, boot and shoe factories, flour mills, quebracho extract establishments, breweries and textile mills. The railroad development of Argentina is greater than that of any other South American country, about 22,000 miles being now in operation, and the machine-shop equipment is correspondingly greater than that of Brazil.

Chile, while much smaller both in area and population than Argentina and Brazil, contains a progressive population and great and varied natural wealth. The mining of nitrate is the greatest industry of the country, but many other minerals are mined, including coal and iron. In fact, about the only iron or steel works of importance on the South American continent is located in Chile. In manufacturing, Chile has many small establishments engaged in tanning, boot and shoe making, weaving and knitting, wood manufactures, machine and foundry work, brewing and distilling, paper making and printing. For operating its machinery, Chile, according to the last enumeration in 1911, required 60,000 hp.

*Manager foreign trade department National Association of Manufacturers.

POSSIBILITIES OF THE MACHINERY TRADE

This brief glance at the three most important and progressive of the South American countries may serve to give an idea of the possibilities of the machinery trade of that continent, keeping in mind the fact that in all the other countries, with few exceptions, the manufacturing industries are very limited and of a character suited only for supplying the local requirements of small communities. But most of the countries of South America have in recent years felt the need of encouraging and developing their resources more energetically, and under normal conditions much foreign capital would be added to that already invested in those countries for exploitation of natural resources and extension of manufacturing enterprises.

On account of the various shortcomings in the official statistics of the several countries, accurate figures showing the value of all the machinery imported by the 10 countries of South America in any one year cannot be given, but a fair estimate of this value, based on the official statistics and a general knowledge of conditions in all the countries, indicates a machinery trade of \$52,000,000 per year in recent years. In this total are included agricultural, electrical and mining machinery and apparatus, machinery for factories and shops, motors and parts of machinery, but not locomotives nor automobiles. Brazil and Argentina alone imported locomotives to the value of nearly \$6,000,000 in 1912.

While the proportion varies with the different countries, taking the continent as a whole, the United States appears to supply nearly 30 per cent. of the machinery imports, with something more than 50 per cent. pretty evenly divided between the United Kingdom and Germany, the remainder being chiefly supplied by France and Belgium.

These figures indicate the value of the South American market to the American machinery manufacturer and the extent to which it is theoretically possible to increase his trade therein through the fortunes of war. But the results of the great war and length of time military operations continue will necessarily materially affect the condition of the South American market itself and the character of the competition to be met there.

How much American machinery manufacturers can increase their trade with South America under present or prospective conditions depends also on other factors. A considerable increase in several industrial lines it is fair to expect if properly looked after, because, cut off from European sources of supply of many manufactured articles, enterprising South Americans will no doubt endeavor to make some of these articles themselves by the erection of plants for the purpose or by the enlargement of already existing establishments.

On the other hand, large enterprises, like railroad building and extension, opening up of mines, improvement of ports and harbors, erection of large factories, dependent as such enterprises largely are on foreign capital, will not be undertaken unless this capital is available from abroad. Moreover, the banking machinery for handling this foreign capital is now seriously obstructed. The foreign bank and the foreign capital naturally to a large degree influence the purchase of equipment and supplies for these large enterprises. Consequently, it will be seen that a large increase in the importation of machinery from the United States and South America does not depend alone on the enterprise of the American manufacturer. He needs the co-operation of the American capitalist and American banker to accomplish the result. This co-operation, it is to be hoped, will now be brought about effectively.

A Steel Bar Guard for Concrete Edges

To protect the edges of concrete curbs and exposed columns, the Trussed Concrete Steel Company, Youngstown, Ohio, has developed the Kahn curb bar. The bar, as will be noticed, is made from



A Steel Curb Bar for Protecting the Edges of Concrete Work of All Kinds

a special steel section and the anchorage extends into the concrete. The shoulder on the upper portion of the bar is relied upon to provide an anchorage independent of adhesion of the concrete. The bars can be placed at the corners of interior or exterior columns of factories, warehouses, shipping rooms, freight stations and other exposed locations to prevent the chipping off of the corners. Another use for the bars is the protection of the edges of steps. The bars are made in standard lengths of 8, 10 and 12 ft., and after being formed are heavily galvanized. Curved bars may be made for use at street intersections.

Moller & Schumann Salesmen's Convention

The Moller & Schumann Company, varnish maker, Marcy and Flushing avenues, Brooklyn, N. Y., held its eighth annual salesmen's convention at the home office August 11 to 14, inclusive. The preparations for this convention were of an elaborate character, being intended for the purpose of getting as great practical results as possible from the meeting of the various salesmen. A programme, printed in advance, was prepared for each day, and certain subjects were given for either the presentation of papers or the opening of discussions in which the salesmen participated, while the evenings were regularly set aside for some sort of recreation. When the salesmen gathered for the convention, a daily sheet was issued which repeated the programme for the day and gave pungent paragraphs regarding the happenings at the meeting. The various preparations indicated that the management of the company is actively working to educate its salesmen to be of still better service to its customers.

Mining Inspector August Swanson, of Crow Wing County, Minn., in his report for the year ended June 30, has the following statement regarding the Cuyuna range: "While three properties have ceased operations, they contain ore in plenty and of a high grade. Three other properties are at an advanced stage of development. Explorations throughout the county are revealing enormous quantities of high grade ore on both the north and south ranges. Eleven mines were operated. The ore shipped from underground amounted to 573,380 tons, and from open pits 101,136 tons, a total of 674,516 tons. The stripping amounted to 2,462,666 cu. yd."

Contracts for automobile wheel rims secured so far this season by the Standard Welding Company, Cleveland, Ohio, indicate that more than 150,000 automobiles of the 1915 stamp will have Stanweld detachable or demountable rim equipment. This great quantity does not include the plain clincher type rims of which the company manufactures approximately 1,500,000 a year. The company further states that so far there has been no indication of any curtailment in the rim contracts it holds, regardless of much comment inside and outside the trade as to the effect of the European war on the automobile industry.

WORKS CONSTRUCTION NEWS

The Value and Use of Such Information in the Trade Press

BY C. A. TUPPER

In any business which involves the manufacture and sale of machinery, making tenders for engineering or construction projects, or taking contracts for work or equipment of any kind, there are few things more important than to keep watch of the news notes appearing in the trade and technical papers. These may be printed as single items covering important projects or be grouped under headings such as "Machinery Markets," "New Construction," etc.; but in either case they represent prospective business, the opportunity of securing which is not to be ignored. Yet, out of the great number of possible beneficiaries of this information, a relatively small percentage is taking anything like proper advantage of it. Why? Well, for many reasons, but principally because of a lack of appreciation of its value.

THE RELIABILITY OF TRADE ITEMS

As to the reliability of such news notes, the writer is in a position to state from experience extending over many years that the information given in the leading trade and technical journals is amazingly accurate, considering the conditions under which it must necessarily be gathered. In fact, it compares favorably with the reports of "prospects" made to the sales department of a machinery company by the latter's representatives in the field.

The impression among some readers that news notes are often unreliable is largely created by the tendency of plant owners or managers to deny flatly that they intend to carry out the new construction, buy equipment or make other improvements covered by the report in question. The idea usually is to avoid the "rush" of those who want to take contracts for the material or work. To illustrate: A salesman sent out on one of these prospects may be told that the report has no foundation or is premature. If the salesman lacks acuteness, he accepts this statement at its face value and reports to the office that the news item which suggested his trip is a fabrication. Thereupon the manager, if also a quitter, denounces the unreliability of such items and lets the matter drop; with the result, usually, that some other concern gets the business when it develops.

A man who has learned to use news items, however, is not so easily put off. He realizes that, while occasionally a report may be exaggerated or premature, or only based on probability rather than fact, it is likely to have originated in a bona fide statement of plans, or at least needs, by some one connected with the concern mentioned. Or perhaps it arose from the purchase of a new factory site or ground for additions, or in some other tangible evidence of expansion. Accordingly, he will persist until he learns the truth; and, if the time is not yet ripe for negotiating a contract, he will keep the subject turning up in his "tickler" until something definite comes of it. Among the cases of this kind that have come within the writer's experience, the following is a typical example:

NEWS REPORTED AS "WITHOUT FOUNDATION"

A short item was published in *The Iron Age* to the effect that a large Eastern manufacturing company, operating several plants, had acquired a site in the West on which to erect another. This item, being clipped from the paper, was sent to the Chi-

cago district office of a large equipment company. Presently there came back to the sales manager, at headquarters, a tart note to the effect that a salesman sent out from the Chicago branch had reported a "wild-goose chase." The Western manager of the Eastern concern mentioned in the item denied positively that his firm had bought the site or had any intention of putting up a new plant, and he was greatly annoyed that such a report had gotten about.

The following week, however, one of the sales manager's assistants, who made it a practice to look through the structural market reports, advised him that the Eastern concern had put out an inquiry in New York for certain material. There was nothing definite to connect this with the construction outlined in the previous item, but the sales manager felt that there was probably some relation between the two; so he sent all the papers on to his own company's New York office. The manager there put an experienced salesman on the job, and the latter at once interviewed the New York manager of the manufacturing concern. This official also began with an emphatic denial of the story, but weakened sufficiently to admit that perhaps something might be learned at the main works of the company, located near Philadelphia. Accordingly the equipment concern's representative in that city was informed of the circumstances. He called on the prospect and opened a negotiation which resulted in a contract for a large line of machinery. Construction of the new plant was started in a few months. So much for a news item that had "no foundation."

WHY DENIALS ARE OFTEN MADE

Similar denials are made, time after time, when as a matter of fact the projects in question have actually been determined upon. This evasion arises from different causes. A subordinate of whom inquiry is made may not know of his superiors' intention; or, what is more often the case, he dares not give out any information, fearing to be "called down" if he does so. On the other hand, when the owner or responsible head of a plant refuses to admit that new construction or an improvement is contemplated, he may have excellent reasons for doing so. For example, he may still be in need of additional ground for new shop buildings and yards, the purchase of which has not yet been consummated, and any general spreading about of the report of his intentions may be likely to result in a higher price being asked for the land.

On the other hand, if the only object of denial is to avoid visits from salesmen, it is difficult to find any reasonable excuse for it. By taking such an attitude, the plant owner or manager puts himself in an absurd position; for it simply means that he refuses to take advantage of competition, and may even remain ignorant of an improvement in machinery which would considerably cut down his costs.

However, whatever may be the cause of a denial of an item concerning new construction or equipment, an experienced salesman can almost always get at the facts. More than that, if he is a man to be trusted by the prospective purchaser—and a good salesman necessarily is—he can get the confidence of the former sufficiently to draw an admission that will begin the negotiation for a contract, thus giving him the start over other bidders.

HOW TO USE NEWS ITEMS

Now, having seen why the common criticism directed against news items is not in the majority of cases well-founded, let us consider some of the methods of using them. In the first place, it may

be said that where a sales manager is interested only in some special class of prospects, he can look through a paper, mark the items with which he is concerned and dictate letters to his men in the field or directly to the possible customers indicated; but if the products of his company include equipment used in numerous lines of industry, such as boilers, engines, pumps, generators, motors, lighting systems, etc., he will find it economy to get two copies of the paper regularly, and have all items clipped and then sorted by one who is familiar with the business. Anyone experienced in this line of work can go through a pile of clipped items very quickly, selecting those likely to be of value and discarding the others. They should then be looked up on a simple card record, to see if there has been anything to the same purport on them before; then pasted, each on a separate slip, and distributed to the district offices, agencies, traveling salesmen, correspondents or other employees, according to the extent and character of the selling system used.

If the company maintains a district office at, say, Cincinnati, the manager there will receive the batch of reports relating to his territory and look them through. Some he may find important enough to form the subjects of letters of inquiry or instruction dictated by himself; others he will turn over to some assistant to follow up with letters, catalogues, etc.; while a considerable percentage will be worth giving directly to the individual salesmen as memoranda for calls. In probably the majority of cases the items relate to prospects with which the salesmen are already in touch, and perhaps have been familiar for some time; but, even so, they frequently throw new light on some phase of the situation; or, what is often very important, they serve as reminders of things that ought to be attended to. In this respect, also, an item is not unlikely to suggest something else in a similar line of construction or equipment or in the same locality. Any experienced salesman will recall the inspirations and "hunches" he has had in relation to certain impending contracts, as a result of reading reports concerning others.

ITEMS OF CONTRACTS PLACED MAY HAVE VALUE

Nor should the item be despised that tells of work for which some competitor—as it develops on investigation—has already secured the order. The best prospect for the future is the man who has purchased and is using equipment. As his business develops, he will enter upon new construction or require additional apparatus for replacements and extensions in his plant. The house which secures his initial orders and then neglects to "cultivate" him will not ordinarily realize as much in the long run as another which, while it may have lost the first contracts, keeps in touch with his future requirements and is ready to take care of them. The best mailing and follow-up list for any construction house, manufacturer or dealer consists of satisfied customers; the next best is composed of others who have dealt with competitors, but who will, in the natural course, be placing orders again.

When used with the same intelligence and discrimination that characterize any other line of business effort, the items of new construction, equipment, etc., published in the trade and technical press can be made an extremely valuable adjunct to sales work. Such use, however, is not nearly as common as it should be, largely because the right system has in many cases not been tried. Perhaps in the above will be found some suggestions that have not heretofore been considered.

AMERICAN INSTITUTE OF METALS

Papers for the September Foundry Convention at Chicago

The programme for the convention of the American Institute of Metals at Chicago, September 7 to 11, in conjunction with the meeting of the American Foundrymen's Association and the exposition of the Foundry & Machine Exhibition Company, has been given out by the secretary, W. M. Corse. It was prepared under the direction of H. W. Gillett, chairman of the Papers Committee. On Tuesday morning, September 8, the Institute has a joint meeting with the American Foundrymen's Association and there will be a joint meeting also on Wednesday morning, September 9. The list of papers for these two sessions has already been given in these columns. The programme for the separate sessions of the American Institute of Metals is as follows:

MONDAY, SEPTEMBER 7.

Registration La Salle Hotel.

TUESDAY, SEPTEMBER 8, 10 A. M.

Joint meeting with the American Foundrymen's Association at Hotel La Salle. Subject: Safety work.

TUESDAY, 2 P. M.

General papers and reports, La Salle Hotel:
Report of Official Chemist, by Arthur D. Little, Inc.
Progress in the Nomenclature of Alloys, by G. K. Burgess.
Some Recent Applications of Metallic Cobalt, by D. B. Browne.

Drop Pouring Process of Casting, by E. A. Barnes.

Bull Run Tale, by Jesse L. Jones.

Modern Die-Casting Practice, by Charles Pack.

Die Cast Aluminum, by A. B. Norton.

Non-Ferrous Alloys for Automobile Construction, by E. B. Horne.

WEDNESDAY, SEPTEMBER 9, 10 A. M.

Cost Congress, Joint session with A. F. A., at Saddle and Sirloin Club, Stock Yards.

WEDNESDAY, 2 P. M.

Rolling Mills: Physical and Chemical Testing:
Care and Conversion of Rolling Mill Scrap, by W. W. Rogers.

A Brief Visit to a Rolling Mill, by Edward J. Gutsche.

A Hot Shortness Testing Machine for Aluminum Alloys, by A. B. Norton.

Making Aluminum Test Specimens on Castings, by A. B. Norton.

Standard Test Bars of the Zinc and Bronze, Copper 88, Tin 10, Zinc 2, by C. P. Karr.

A New Method for the Determination of Zinc in Alloys, by G. E. Lundell and Mai Kim Bee.

Brinnell Hardness Testing of Non-Ferrous Alloys, by V. Skillman.

THURSDAY, SEPTEMBER 10, 10 A. M.

Session on Metallurgy and Metallography, at Saddle and Sirloin Club:

Commercial Classification of Copper, by Lawrence Addicks.
Spelter Manufacture and Properties, by George C. Stone.

Metallurgy of Tin and Antimony, by W. A. Cowan.

Ternary Alloys of Copper, Tin and Zinc, by S. L. Hoyt.

The Effect of Repeated Remelting on Copper, by F. O. Clements.

THURSDAY, 2 P. M.

Session on Melting Practice:
Tests of Electric Furnaces for Brass Foundry, by Herbert G. Dorsey.

Electric Furnace for Medium Temperatures, by E. M. Schmeize.

Electric Brass Melting from the Central Station Viewpoint, by H. M. St. John.

FRIDAY, SEPTEMBER 11, 10 A. M.

Session at Saddle and Sirloin Club:

Melting Losses in Electric Brass Furnaces, by H. W. Gillett and J. M. Lohr.

Use of Producer Gas in Melting Yellow Brass, by E. B. Gunther.

Test of Natural Gas Fired Furnaces under Factory Conditions, by Fred L. Wolf and Robert B. Burr.

Electric Brass Melting, by G. H. Clamer and Carl Hering.

Pyrometers for Melting Brass and Bronze, by H. W. Gillett.

The convention headquarters for the American Institute of Metals will be at the La Salle Hotel.

The Ferro Machine & Foundry Company, Cleveland, Ohio, will install a complete system of ventilation throughout its machine shop, foundry, core rooms, etc. Changes will be made to increase the economies of light, heat, power, transportation, etc. J. C. Gorton will be in charge of this work.

The British Iron Trade Association reports the production of pig iron in the United Kingdom in the half year ended June 30 as 4,507,984 gross tons, subject to correction. In the last half of 1913 the output was 5,071,290 tons and in the first half of 1913 it was 5,410,627 tons.

S. DIEBACHER & SONS,
Mechanical and Civil Engineers,
PITTSBURGH, PA.

PEAT IN IRON-ORE INDUSTRY*

Possibilities as a Fuel and a Briquette Binder in Beneficiating and Smelting Operations

BY PETER CHRISTIANSON

Attention is called to the possible uses of peat in connection with the iron-ore industry.

1.—On account of the proximity of the peat and ore deposits in the Lake Superior district.

2.—The desirable utilization of worthless iron bearing material thus effected.

3.—The utilization of peat bogs which are usually regarded as waste areas.

All concentration of the ores processes require power. Peat is primarily a low-grade fuel which economically will not bear transportation. However, for power purposes the transportation problem of peat is not a serious obstacle.

For power purposes a peat power plant should be located at the peat bog, and should consist of the following parts:

A plant for producing machine peat; a gas producer plant for gasifying the machine peat and making producer gas, and gas engines coupled to electrical generators. By this scheme the peat is converted at the bog into electrical energy, which may be conducted without undue loss to any reasonable distance and utilized as power at the concentration plant.

FOR HEATING OPERATIONS

Drying, roasting, calcining and sintering operations are becoming more and more important. Taken collectively it may be said that these operations are partly for concentration and partly for physical betterment of ores. Of these operations, drying requires the lowest temperature and sintering the highest, while roasting requires an intermediate temperature together with a regulation of the furnace atmosphere. There is no inherent reason why peat could not be utilized as a fuel in all these operations; and the proximity in many places of the peat and ore deposits makes this seem reasonable as a commercial proposition. Machine peat could readily take the place of coal, but it should be noted that the heating power of peat is only about one-half that of good soft coal. Therefore, the grate area necessary for doing a given amount of work must be nearly twice as large for peat as for coal. This method of burning peat requires the simplest preparation of the fuel. In fact, its preparation is identical with that used in preparing peat for power purposes. Hence the same peat plant, if of sufficient capacity, will serve both for power and heating purposes.

The method of burning peat in a powdered form has recently been perfected. It is being used in Sweden for firing locomotive boilers, and is easily adapted to the firing of the cylindrical furnace used for drying, roasting or calcining. In fact, this method of using powdered fuel was first applied to the horizontal cylindrical type of furnace. The cost of preparing peat in a powdered form is fully twice as high as that of producing machine peat. However, the use of powdered fuel is more economical and a higher temperature is obtainable. Hence for high temperature operations, such as roasting, calcining and sintering, it may be advantageous to use peat in this form.

Still another method of using peat for heating purposes is that of making it into producer gas and

then burning this gas in furnaces used for drying, roasting or sintering purposes. For example, in one process, the fine ore is first made into briquettes. These briquettes are ignited at a very high temperature in a furnace characterizing the process. The fuel used is producer gas burned on the recuperative principle. It is suggested that this producer gas be made from peat, provided a suitable supply is located near the briquetting plant.

PEAT AS A BINDER FOR ORE BRIQUETTES

Pure or nearly pure iron oxide as it exists in a finely divided condition or as a concentrated product has no plasticity nor coherence. In order to agglomerate such material at ordinary temperature, it must be mixed with some binder. The plasticity and binding properties of peat are quite characteristic. This is particularly true of the best grade, which is dark or nearly black in color. This grade of peat, containing about 75 per cent. moisture, thoroughly macerated, has an unctuous feel and will dry into a coherent mass which will stand considerable wear and tear before breaking into pieces. In fact, it is this binding property of peat which makes the manufacture of machine peat possible.

The writer has recently made some experiments at the Minnesota School of Mines Experiment Station. Fine concentrates were mixed in varying proportions with peat containing 75 per cent. moisture. These mixtures were made into briquettes in a manner similar to that used in the manufacture of machine peat. Samples of these briquettes contained 12½, 12¾ and 15 per cent. of equivalent dry peat. All of these exhibit a rather remarkable degree of toughness and resistance to wear. If heated in an oxidizing atmosphere, the briquettes immediately crumble, but in a reducing atmosphere like that of a blast furnace they retain their shape quite persistently. To determine the mechanical and physical properties of these ore-peat briquettes, a series of tests is being conducted by the writer at the Minnesota School of Mines Experiment Station, but the experiments are not complete.

The impurities introduced into the briquettes by the use of peat as a binder would be a minimum; first, on account of the small percentage of peat used, and, second, because of the small percentage of impurities. The total foreign or slag-making constituents added in the binder, assuming 10 per cent. ash in the peat and 15 per cent. dry binder in the briquettes, would only equal 1.5 per cent.

POSSIBILITIES OF PEAT FOR SMELTING

From the published analyses as well as from a few made at the experiment station, it does not appear that peat charcoal can take the place of wood charcoal in the production of charcoal pig as conducted at the present time. However, there is so much variation in the analyses of peat that each bog would have to be sampled, and the samples analyzed, in order to determine its probable value in this connection.

If peat could be made into a coke having the requisite hardness, there is no doubt that this coke could be used in the production of coke pig iron. It is only a question of making the peat into a suitable coke. There is a possibility that a smelting practice, intermediate between the present charcoal and coke, would be developed by the use of peat coke; and this might modify the resulting pig iron, so that it could take the place of the present charcoal pig.

One more contingency may arise in which peat may be used in the smelting of iron ores. The time may come when electric smelting may become an important factor in the production of pig iron.

*From a paper presented August 20 before the eighth annual meeting of the American Peat Society, Duluth, Minn. The author is Instructor in metallurgy, Minnesota School of Mines, University of Minnesota, Minneapolis.

Even at the present time, electric smelting is being introduced into some localities with considerable success. In electric smelting, electricity is the source of heat, but some form of carbon must be presented to reduce the ore. As the process is conducted at the present time, wood charcoal is the most efficient form of carbon for reduction. Coke is too good a conductor of electricity and interferes on account of its conductivity. For this purpose, peat charcoal, if available, can doubtless take the place of wood charcoal when this has been exhausted.

JUNE EXPORTS AND IMPORTS

Tonnage Imports of Iron and Steel Less Than Last Year—Export Decline Checked

A somewhat interesting contrast in the foreign iron and steel trade of the country is presented by the June report of the Bureau of Foreign and Domestic Commerce. While the total value of the exports of iron and steel for the month show a falling off of approximately 25 per cent. from the figures for June, 1913, the statistics indicate that for the fiscal year ended June 30, 1914, the decline in value was only 17.5 per cent. as compared with 1913. This is also true of the imports, the percentages for the month of June and the fiscal year being 86 and 94.5 respectively of the value of the iron and steel imported in the corresponding periods of the previous year. The exports fell off at the rate of \$8553 per day in June as compared with May, while the daily average of imports increased \$3043. The total value of the exports of iron and steel and the manufactures thereof, exclusive of iron ore, was \$18,927,958, against \$19,734,045 in May, \$20,639,569 in April and \$25,228,346 in June, 1913. Corresponding values of imports were \$2,835,110 in June, \$2,835,290 in May, \$2,893,280 in April and \$3,291,875 in June, 1913.

In June the imports of commodities for which quantities are given totaled 23,075 gross tons, as compared with 28,170 tons in May, 30,594 tons in April and 36,597 tons in June, 1913. The decline in the imports was general, the most notable exception being sheets and plates which increased from 167 tons in 1913 to 665 tons this year. Steel rails increased 201 tons for the month over the 1913 figures, but these were the only cases. The greatest decline was in tin and terne plates, from 7726 tons in 1913 to 179 tons in 1914, but the figures for the fiscal year tell another story, the imports having increased in the 12 months from 12,654 to 21,821 tons. The increase in the yearly imports of steel rails from 5024 to 15,507 tons also helped to bring the yearly figures up to within 200 tons of what they were last year. Over 90 per cent. of the steel rails were imported in the nine months that this commodity has been on the free list.

Details of the imports of tonnage commodities in June and the 12 months ended with June, compared with the corresponding periods of the previous fiscal year, are as follows:

Imports of Iron and Steel.

	June		Twelve Months	
	1914	1913	1914	1913
Pig iron (including ferrosilicon)	13,506	*38,892	155,169	
Ferrosilicon	424	... 13,750	...	
All other pig iron	9,216	*93,802		
Scrap	4,654	5,669	34,310	41,163
Bar iron	1,661	2,840	21,864	30,164
Structural iron and steel	1,106	1,745	11,031	8,005
Ingots, blooms and steel billets	...	2,110	*6,317	20,869
Steel billets without alloys	84	...	*3,465	...
All other steel billets	3,476	...	*27,822	
Steel rails	798	597	15,507	5,024
Sheets and plates	665	167	3,521	3,724
Tin and terne plates	179	7,726	21,821	12,654
Wire rods	812	2,237	11,672	17,183
Totals	23,075	36,597	293,774	293,955

*Figures cover period from July 1 to October 3, 1913, inclusive.

Figures cover period since October 3, 1913.

The exports of commodities for which quantities are given totaled 143,953 gross tons in June against 139,110 tons in May, 161,953 tons in April and 243,129 tons in June, 1913. The decline in the exports in June as compared with the corresponding month of the previous year is about 41 per cent., which is the same rate as for May. As was the case in May, almost all the commodities registered declines in the monthly figures, the exceptions being wire rods, cut nails and steel sheets, all of which showed increases in May, and tin and terne plates and barbed wire. Steel sheets was the only one of these to show an increase for the whole year. Horseshoes, while falling off for the month from 88 to 39 tons, nevertheless increased in the yearly figures from 1158 to 1662 tons.

Details of these tonnage exports in June and the 12 months ended with June, as compared with the corresponding periods of the previous fiscal year, are as follows:

Exports of Iron and Steel.

	June		Twelve Months	
	1914	1913	1914	1913
Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	12,894	22,784	201,995	287,022
Scrap	2,598	4,995	69,282	102,201
Bar iron	333	814	10,300	22,958
Wire rods	11,929	5,293	56,046	74,823
Steel bars	11,134	16,207	149,113	231,091
Billets, ingots and blooms	5,126	7,322	46,926	230,728
Bolts and nuts	1,336	2,177	19,827	21,633
Hoops and bands	744	1,167	11,552	18,312
Horseshoes	39	88	1,662	1,158
Cut nails	351	175	4,525	4,805
Railroad spikes	773	1,664	8,645	13,381
Wire nails	2,297	3,824	35,853	54,526
All other nails, including tacks	226	229	3,184	4,209
Pipes and pipe fittings	17,974	28,194	240,724	272,230
Radiators and cast-iron house heating boilers	333	780	5,467	8,615
Steel rails	13,161	44,574	338,613	452,545
Galvanized iron sheets and plates	3,574	6,366	53,740	114,649
All other iron sheets and plates	1,046	2,160	11,476	32,026
Steel plates	9,100	21,826	160,390	263,313
Steel sheets	12,350	11,178	142,392	132,920
Structural iron and steel	15,833	37,753	296,282	366,654
Tin and terne plates	7,180	5,576	47,277	73,376
Barbed wire	6,724	6,108	79,775	87,528
All other wire	6,898	11,875	84,318	137,795
Totals	143,953	243,129	2,076,364	3,008,498

The total value of the exports of iron and steel and manufactures thereof, not including iron ore, for the fiscal year ended June 30, 1914, was \$251,480,677, against \$304,605,797 for the previous one. The imports of iron and steel and manufactures thereof, exclusive of iron ore, in the same period were valued at \$31,790,851, compared with \$33,636,358 for the fiscal year ended June 30, 1913.

The imports of iron ore in June amounted to 188,647 gross tons, as compared with 125,659 tons in May, 111,812 tons in April and 241,069 tons in June, 1913.

British Iron and Steel Exports Continue to Decrease

The iron and steel exports of Great Britain for the first seven months of 1914 show a decrease both in tonnage and values from 1913. The total sent abroad to August 1, 1914, excluding iron ore and scrap, was 2,750,363 gross tons against 2,950,170 tons in the first seven months of 1913, the decrease being 199,807 tons. The decrease in values was £3,499,524, or from £32,723,766 to £29,224,242. In pig iron, including ferro-alloys, the decrease in exports was 56,494 tons, the total to August 1, 1914, being 585,997 tons against 642,491 tons. The exports of galvanized sheets were 438,362 gross tons, or 2110 tons less than for the first seven months of 1913. This is the first time this year that a decrease has been shown in this item.

Imports of iron and steel, excluding iron ore and scrap, to August 1, 1914, were 1,368,812 gross tons against 1,278,141 tons to August 1, 1913, an increase of 90,671 tons. The values for these two periods were £8,914,221 and £8,866,288 respectively, an increase in imports of £47,933 as compared with last year. For the first six months of this year, a decrease was shown.

ESTABLISHED 1855

THE IRON AGE

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The Spelter Situation

It does not seem probable that in the long run the spelter market will bear out the early expectations of producers of a total advance running into several cents per pound as a result of the European war. The last day on which the market stood at approximately the recent minimum was August 6, when the market at East St. Louis was quotable at 4.72 1-2 cents. The early rise was so rapid that on August 20, just two weeks later, 5.75 cents was reached, an advance of a shade more than one cent a pound. The previous high point had been 5.75 cents, reached early in September, 1913, so that the market gained in two weeks what it had taken ten months to lose. On this rapid advance predictions were made by sellers of a price anywhere between 7 cents and 10 cents a pound.

The only basis for the prediction appears to have been the appearance of some inquiry from England and the possibility that England would call for considerable amounts in future. So far as the domestic situation was involved, the price was extremely low, but hardly so low that it could not stay down, while the stocks in the hands of smelters, according to the report of the United States Geological Survey, increased by 23,380 tons during the first half of this year and reached on July 1 the very large total of 64,039 tons. Furthermore, the brighter prospects of peace in Mexico have promised a larger supply of zinc ore from that source, either for smelting in the United States in bond in order to export spelter to England, or for direct export of the ore to English smelters.

The Geological Survey has just compiled a very timely statement of the world spelter situation, furnishing facts which seem sufficient to gauge with considerable accuracy the probable limits of English demand for our spelter. Using the calendar year 1913 as a basis, the production on the Continent of Europe was 655,454 net tons, about 150,000 tons of this spelter being exported to England, while to other countries there were exports of 67,858 tons in the form of slabs and sheets, besides some exports of galvanized sheets which were small by comparison with British galvanized sheet exports.

The British spelter production was 65,197 tons, this supply being reinforced, as indicated, by imports of about 150,000 tons from the Continent. The centers of European spelter production are very largely in the war zone, and it seems reasonable to argue upon the basis that Europe will neither import nor export spelter for some time to

come. The question, then, is as to the probable position of Great Britain. The British zinc smelters will doubtless continue in operation. While labor might possibly be scarce, it would be better to secure labor than to pay fancy prices for spelter from the United States. The ore can probably be found, as the Belgian and other Continental markets may be assumed to be closed against the zinc concentrates from Broken Hill, Australia, and Mexico promises a supply also.

To furnish Great Britain with as much as 150,000 tons of spelter a year, the amount that country imported from the Continent last year, should not strain the resources of the United States. The stocks at smelters on July 1, 64,039 tons, would take care of the shipments for five months. In the first half of this year the apparent domestic consumption was 149,363 tons, the production being 175,058 tons, with an accumulation in stocks of 23,380 tons. The Geological Survey estimates the productive capacity, on the basis of high grade ores, at 561,165 tons annually, but points out that the actual output would fall short of this on account of the smelting of some low grade ores and the redistillation of zinc drosses; but an estimate of 500,000 tons annual capacity would doubtless be conservatively low, leaving, at the rate of domestic consumption in the first half of this year, an apparent surplus of 200,000 tons a year.

No account need be taken of spelter production elsewhere, as the combined output of Australia and Japan last year was only 11,305 tons. As to increased demands upon Great Britain and the United States for galvanized sheets, the combined galvanized sheet exports of Germany, Belgium and France last year were less than one-sixth those of England, and amounted to only 102,281 tons. The spelter involved was probably less than 10 per cent., or not over 10,000 tons, so that the combined spelter consumption of the United States and Great Britain is not likely to be augmented by the war. Continental exports of zinc slabs and sheets were 67,858 tons last year, and what may remain of this trade should be absorbed without difficulty.

Thus the statistics strongly indicate that while the demand for spelter from the United States may be relatively large, there is no prospect of the smelting capacity being unduly strained. If peace is really restored in Mexico, a large portion of the spelter exports may be made by smelting Mexican ores in bond, whereby England might be supplied with spelter at a lower price than the regular St. Louis market plus the cost of carriage.

Lower Rail Rates to the Pacific Coast

The opening up of the Panama Canal for traffic and the fixing of the toll of 30 cents per 100 pounds for hauling finished iron and steel from New York to the Pacific coast via the canal have caused transcontinental lines that have heretofore had nearly all the Pacific coast business to propose a material reduction in their carrying charges. Details of proposed reductions in the all-rail haul from Chicago and Pittsburgh are given elsewhere. The point made by Pittsburgh steel manufacturers is that if the proposed reduction to 50 cents per 100 pounds on iron and steel products to the Pacific Coast from Chicago is allowed by the Interstate Commerce Commission, they will be compelled to use the canal entirely for their Pacific coast business and a large tonnage formerly hauled from the Pittsburgh district by the transcontinental lines will be diverted to the lines running from Pittsburgh to the Atlantic seaboard. Already transcontinental lines are feeling the effects of the opening of the Panama Canal. One road that has maintained freight offices in Pittsburgh for some years reports that its tonnage secured in July for Pacific coast delivery showed a heavy falling off. Pittsburgh shippers had held up shipments for the coast until the canal was opened, and instead of paying 80 cents per 100 pounds, the all-rail rate from Pittsburgh to the coast, they took advantage of the rate of 16 cents by rail from Pittsburgh to New York and 30 cents via Panama Canal from New York to San Francisco. Additional charges for insurance, dockage, etc., bring the rate up to about 48 cents on docks at the coast. While Pittsburgh, as indicated elsewhere, will not benefit by the proposed rate of 50 cents from Chicago to the coast, it has the 46-cent rate via the canal available, and its manufacturers will naturally avail themselves of it, the Eastern roads getting the rail haul. On such products as are manufactured by Chicago district mills, the transcontinental lines might make up for the loss of Pittsburgh freight to the coast, if the reduced Chicago rate becomes effective. There is a considerable tonnage of finished material, however, such as tin plate, wrought pipe and wire products, which would be lost to the Western lines should a \$12.24 rate per ton from Pittsburgh accompany a \$10 rate from Chicago.

An Important Result of the War

The European war, with its interruption to commerce, has uncovered many weak spots in our commercial and industrial position. It has especially disclosed the disagreeable fact that we are far from being self-contained with respect to many of the minor essentials needed by our manufacturing industries. We have developed our natural resources on a tremendous scale, so that we pride ourselves on being the foremost country of the world in the quantity and value of our manufactured products in general. While, however, we possess and have developed most of our essential raw materials, for some reason we have been satisfied to rely upon other countries for minor but necessary products instead of applying ourselves to their production or extraction. Numerous American manufacturers

have probably concerned themselves very little regarding the primary sources from which some of their raw materials were derived. They have now suddenly been compelled to face the exasperating situation of either being obliged to pay very high prices for some essential minor material or to turn to the use of more or less unsatisfactory substitutes.

It is indeed surprising to find how great a variety of American industries has been hit by dependence upon something which may perhaps have been considered as among the least important of the raw materials needed. The daily press is now recording numerous lines in which American experts are at work in the effort to establish in this country the means by which much of what has hitherto been imported may be produced here. The Germans have been most indefatigable in applying themselves to the production of minor products that are really indispensable to manufacturers of staple articles. They have built up vast industries upon which practically the entire world has taught itself to rely. Perhaps sufficient attention would not have been called to this condition but for some exigency such as has grown out of the disorganization of commerce caused by the war. It can hardly be regarded as anything else than a fortunate awakening if the result of the war should prove to be the creation of a multitude of new industries on this side of the Atlantic. Something of this sort, rude as the shock may have been, was needed to rouse us from the belief that we occupied practically an independent position.

The Rate Decision Gives Promise

The decision rendered on August 1 in the Eastern rate case appears hardly to justify the weary delay that attended its announcement. There has been, indeed, some ground for the suspicion long entertained that the commission was waiting for a time when the decision could be rendered with least promise of disturbance to the security market or trade generally. If so, the commission found its opportunity, for the decision has received but little attention or discussion. It does seem strange that after such a long and unexplained delay the decision should be given on the second day that the stock exchanges of the country were closed. A theory had received considerable support that the delay arose from a desire to render a unanimous decision; but if there was such an effort it was unsuccessful, for the decision is by a bare majority, three out of five. It is not clear whether any decision at all could have been rendered if one of the three in the majority had held any other views, for the dissenters, Commissioners McChord and Daniels, filed separate dissenting opinions.

Circumstances have been such as to prevent candid expression of opinion upon the decision by any large number of railroad men or shippers. Interviews have been secured from a number of railroad men, but the statements made are noticeably of a perfunctory character, and the real attitude of the railroad world is probably yet to be disclosed.

It required, or at least the railroads were convinced it required, a very hard campaign both before the commission and before the bar of public opinion to secure even a partly favorable conclusion

of this famous issue, and the arguments used by the railroads must be viewed with this fact clearly in mind. Necessarily the railroads contended for a granting of the specific advance asked on the ground that the added revenue was absolutely needed. Yet there is good ground for maintaining that the contention was for the principle that in certain circumstances the commission would grant advances, more than for the annual revenue involved. Of course, there was a tacit admission of this fact in the claim that without added revenue sufficient sums of money could not be borrowed to enable the railroads to do their duty to the public. Investors would naturally pay more attention to the question whether the railroads were up against a stone wall in the form of the Interstate Commerce Commission than to the question of the precise amount of the annual revenue, for the amount computed as represented in the advances asked was \$50,000,000 a year, and the annual fluctuations in revenue of the roads involved have been in multiples of this amount. From 1912 to 1913 (fiscal years) this revenue increased \$130,000,000, while in the next fiscal year it decreased more than \$50,000,000.

If the decision is to be studied with respect to the principles laid down rather than the amount of increased annual revenue allowed, it is decidedly favorable to the railroads. New England and trunk line territory are given no advances, while in Central Freight Association territory, the third division of Eastern classification territory, the full 5 per cent. is given on about two-thirds of the traffic, exception being made of iron ore, coal and a few other commodities.

The decision plainly states that rates in Central Freight Association territory were so much lower than elsewhere in the country that an even greater advance than 5 per cent. might possibly be countenanced. Since the commission is engaged in the task of unifying the rate structure of the country, it could not reasonably grant an advance in trunk line territory at the same time. Of course the aspect is somewhat clouded by the fact that the dissenting commissioners both held that no distinction should have been made between the two territories.

The decision frankly admits that the revenues in all territory are inadequate, and in several important particulars suggestions are made whereby they may be increased without a general advance being made in rates. It has been well known for months that such suggestions would be made.

The fact that passenger service has not been paying its proportionate share of the expense of conducting the railroads has been discussed at some length in these columns in the past, and we have pointed out that the railroads were naturally silent on this subject, because they found themselves more or less in bondage to the various State commissions, and would only injure their case as to freight rates if they emphasized the fact that passenger rates were inadequate. The commission now endeavors to cut this Gordian knot by the exceedingly simple expedient of recommending that the railroads take up the question with their various State commissions and with the communities they traverse. It is not easy to get the full bearing of this sugges-

tion. There appears to be no direct tender of the commission's "good offices" along this line. Possibly the commission feels it would be an interesting diversion for the public to be turned on to the State commissions for a while.

Of particular interest are the recommendations for increased efficiency, through more rapid, or rather more continuous, movement of freight cars and through heavier loading. Of course this is no new recommendation, seeing that for several years the railroads have been working along that line. Their success thus far has been very moderate. The average movement of freight cars has been increased somewhat, but the increase is still very small. The percentage of loading has, we suspect, decreased rather than increased, not because the average load, measured in tons, has decreased, but because the average capacity has increased and the loading has not increased in proportion. If there is any point to the commission's recommendations in this matter of increased efficiency, it is that the railroads will be cordially supported by the commission in taking more drastic measures to compel shippers to load cars more fully and to take less time in loading and unloading. If that is the spirit in which the observation is offered it means something; otherwise the railroads are no wiser than they were before.

In the editorial article in our issue of August 13 on "The Ferromanganese Situation" reference was made to the average apparent consumption of ferromanganese (imports plus home production) per ton of steel ingots produced. An added cipher made this amount 170 pounds. It should have been 17 pounds.

Industrial Sidings

Railroad sidings for industrial plants was recently touched on in connection with the paper on the design of factory buildings read before the Civil Engineers Society of St. Paul, Minn., by W. E. King, secretary of the Toltz Engineering Company. It was brought out how the real necessities of the situation as regards bringing raw materials and taking away the finished product are often not fully apprehended, when a little consideration at the beginning of the planning for the factory would have saved in the end. In the discussion, George H. Herrold, St. Paul, mentioned that the common factory switch costs approximately \$185 in place; track, 82 cents per running foot; low trestles, \$9 per running foot, and grading for the roadbed, 20 to 50 cents per running foot, per foot of fill.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., has issued a booklet entitled "The Young Man and the Electrical Industry," written by James H. Collins. The book deals with the opportunities afforded to a young man in this industry and the different lines in which he may direct his activities exemplified by the works of the Westinghouse Company. The company will supply a copy to anyone interested in the development of young men.

The Dell Development Company, Duluth, Minn., has contracted with the Mesaba Boiler & Mfg. Company of that city for the building of a furnace which it says is designed specially to treat the manganiferous ore of the Cuyuna range. The company adds that it will manufacture spiegeleisen and ferromanganese and that it expects to have the furnace in operation about September 15, with a capacity of 50 tons a day.

PITTSBURGH AND COAST TRADE

Proposed Reduction in Steel Freight Rates to San Francisco

At a meeting of traffic managers of most of the transcontinental lines held in Chicago last week it was practically decided to present a petition to the Interstate Commerce Commission asking that the transcontinental railroads be allowed to make a flat rate on iron and steel commodities of 50c. per 100 lb. from Chicago to the Pacific coast. The present all-rail rate from Pittsburgh to the coast is 80c., and under a traffic arrangement existing for some years the lines running from Pittsburgh to Chicago have been allowed a rate of 11.2c. per 100 lb. on the all-rail haul from Pittsburgh to the coast. These lines have intimated that they will not be willing to accept less than 11.2c. for the haul to Chicago, regardless of what the transcontinental lines may fix as the rate from Chicago to the coast. At 11.2c. to Chicago and 50c. from Chicago to the coast, the all-rail rate from Pittsburgh to the coast would be 61.2c. per 100 lb., or \$12.24 per net ton. This would be \$3.76 a ton less than the present \$16 all-rail rate from Pittsburgh to the coast, and which on its face would appear to be an advantage to Pittsburgh steel mills. However, the opening of the Panama Canal changes this aspect of the situation.

The rail rate from Pittsburgh to New York, 16c. per 100 lb., and the recently established rate of 30c. per ton from New York through the Panama Canal to the Pacific coast, makes a rail and water rate from Pittsburgh to the coast of \$9.20 per net ton or \$3.04 lower than the proposed \$12.24 rate from Pittsburgh by all rail. But, if the transcontinental lines are allowed to make a rate of 50c. per 100 lb. on iron and steel from Chicago to the Pacific, it is a question whether Pittsburgh can figure to any extent in the Pacific coast trade. A Chicago freight rate of \$10 against \$12.24 from Pittsburgh would put the Chicago producers in a position largely to control all-rail shipments. For years there has been what is known as the "postage stamp" rate of 80c. per 100 lb. on most iron and steel articles to the coast from points east of Chicago, as well as from Chicago. In other words, steel mills in Harrisburg, Johnstown and Pittsburgh, and even as far east as Bethlehem and Coatesville have been able to ship to the coast as cheaply as Chicago mills.

If the proposed 50c. rate from Chicago to the coast becomes effective, Pittsburgh shippers would have to absorb the present charge of \$2.24 per net ton to meet the competition of Chicago. It is also true that Pittsburgh would be at a disadvantage in competition with Eastern mills for Pacific coast trade. At present Johnstown has a rate of 14c. to New York, while Coatesville, Bethlehem and Steelton have a 9c. rate to New York. Adding this last to the Panama Canal rate of 30c. gives the mills in these districts a through rate of 39c. to the Pacific coast as against 46c. from Pittsburgh to the coast via New York and the canal. To meet the rate of 50c. from Chicago, if put in force, Pittsburgh steel mills would need to make all their shipments via the Panama Canal, which would give them a 46c. through rate to the coast, with about 2c. additional for insurance, dockage, etc., against 50c. from Chicago. A hearing of the presidents and traffic managers of the transcontinental lines before the Interstate Commerce Commission is to be held in Washington, D. C., Tuesday, November 6, when evidence will be presented to the commission in support of the petition to allow the 50c. rate from Chicago to the coast to be made effective.

The Wisconsin-Minnesota joint legislative commission to investigate the feasibility of building a ship canal from Lake Superior, at the head-of-the-lakes, to meet the navigable waters of the Mississippi River, has made a favorable report, which is approved by the corps of engineers, U. S. A. This will support a bill appropriating \$8,000,000 now before Congress. E. F. Ackley, Chippewa Falls, Wis., is chairman of the Wisconsin board.

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Programme of Boiler Manufacturers' Convention

The twenty-sixth annual convention of the American Boiler Manufacturers' Association will be held at the Waldorf-Astoria Hotel, New York City, September 1 to 4, inclusive. The question of the standardization of steam boiler specifications will receive considerable attention and it is hoped that some progress will be made toward harmonizing the variations existing at present among the laws of the different States and a committee will be appointed to confer with the boiler specifications committee of the American Society of Mechanical Engineers, which committee is to hold a meeting in New York, September 15.

The programme of the American boiler manufacturers' convention is as follows:

Tuesday morning, September 1, 10 a. m.—Opening session with an address of welcome by Hon. George McAneny, president of the Board of Aldermen, New York City.

Tuesday, 2 p. m.—Reports of executive and membership committees and appointment of committees on place of next meeting, nominations and auditing.

Tuesday evening—Reception.

Wednesday, 10 a. m.—Report of committee on uniform specifications.

Wednesday, 2 p. m.—Reports of committee on uniform boiler laws.

Thursday, 10 a. m.—Reports of committees on uniform system of cost keeping and topical questions.

Thursday, 2 p. m.—Reports of committees on place of next meeting, auditing and nominations.

Thursday evening—Banquet.

Friday, 10 a. m.—Executive meeting.

The meetings will be held in the Astor Gallery and it is expected that James A. Farrell, president of the United States Steel Corporation, will be among the speakers at the banquet.

The Iron and Metal Markets

FEW EXPORT SALES AS YET

Inquiries from England and Elsewhere

Advance in Billets and Sheet Bars—Sheet Market Stronger—Canadian Depression

The situation in the steel industry is briefly that the mills are as busy as in July, while some of them are turning out more; that the new buying is considerably less day by day than the production; that a variety of inquiry has come from abroad, without much buying thus far.

Consumers as a rule want all that is coming to them and the very full specifications the mills are getting on contracts at old prices are due in part to the recent advances and to the desire of some buyers to get moderate stocks ahead against what might develop from a prolonged war.

The tendency at the moment is to exaggerate the amount and significance of the inquiries from other countries for American steel products. England has asked prices on billets, sheet bars, wire rods and plates. The inquiries for billets 2 x 2 in. and larger amount to several thousand tons. For Australia 31,000 tons of rails are wanted, but this business has been expected for some time. Canada has been in the market for larger tonnages of wire rods and sheets than in some months. South American inquiry for iron and steel is small and tentative. Japan has inquired for small amounts of a number of products, but rather in fear that British shipping would be held up more than has proved to be the case. England will probably sell Japan the low phosphorus pig iron on which our Eastern makers have been figuring.

Here and there business in machinery is reported, directly resulting from the war. From England machine tool builders have had a number of cable orders in the past week.

That this country will eventually make large exports of steel products because the European supply has been cut off is the general expectation of manufacturers and that expectation is shaping present market policy of leaders in the trade. Meanwhile the halt in financing and the shutting off of outlets for cotton, oil, implements, automobiles and other products have been influential enough to modify some paper enthusiasm.

The tendency of prices is upward. In wire products the \$1 advance made by two independent companies has been followed by the Steel Corporation and others, bringing nails to \$1.60 and fencing wire to \$1.40. Spring dating has also come in to encourage forward bookings.

Another definite advance is in billets and sheet bars which are now \$21 and \$22 respectively at Pittsburgh and Youngstown mills. A sale of 12,000 tons of sheet bars was made, on which September deliveries will be at \$22.

Eastern plate manufacturers have been asked for prices on a number of lots for export. One

Central Western sale included 50 tons of plates and a quantity of angles for Norway. But the prostration of the oil industry has cost the plate mills business in the cutting off of tank work.

With all the uncertainty in the money situation the railroads are making no moves and rail mills are waiting with them. The C., H. & D. order for 2000 cars stands alone. The Johnstown mill has been exceptional in getting together a total of 32,000 tons of rail orders this month. The recent B. & O. contracts totaled 10,000 tons and 5000 tons more will be bought. Shipments have been held up on 13,000 tons of Pennsylvania Steel Company rails and 5000 tons of Steel Corporation rails for Australia.

In ferromanganese excitement is less, and the price is more generally \$100, though transactions are still limited. English makers have made some shipments to docks there and sailings are booked for within another week. The report of a British Government embargo on ferromanganese shipments is unfounded. On future deliveries an \$85 quotation has been made within the week. The Steel Corporation is blowing in a furnace in the Birmingham district on ferromanganese, using ores from Brazil and Cuba.

Pig iron has had little or no share in the advancing tendency in finished materials. Buying continues light. In the Central West one sale of several thousand tons carried a 50-cent advance on deliveries after January 1. Some tentative inquiry has come up in that section for basic iron for next year. At Chicago as low as \$13.50 at furnace for No. 2 foundry was done recently in competition with Southern iron, in view of the 35-cent freight reduction on the latter.

The Canadian steel industry is depressed, largely because railroad and other financing by England is stopped, holding up rail orders. The Dominion works has closed down and the Sault mill goes on half time next week. The iron mines on Belle Island have also stopped.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type. Declines in Italics

At date, one week, one month, and one year previous.

	Aug. 26	Aug. 19	July 29	Aug. 27
Pig Iron. Per Gross Ton:	1914.	1914.	1914.	1913.
No. 2 X, Philadelphia...	\$14.75	\$14.75	\$14.75	\$15.75
No. 2, Valley furnace...	13.00	13.00	13.00	14.00
No. 2 Southern, C'nti...	13.25	13.25	13.25	14.25
No. 2, Birmingham, Ala...	10.00	10.00	10.00	11.00
No. 2, furnace, Chicago*	13.50	13.75	13.75	15.00
Basic, del'd, eastern Pa.	14.00	14.00	14.00	15.00
Basic, Valley furnace....	13.00	13.00	13.00	12.00
Bessemer, Pittsburgh....	14.90	14.90	14.90	15.65
Malleable Bes., Chgo...	14.00	14.00	14.00	15.00
Gray forge, Pittsburgh...	13.65	13.65	13.65	14.25
L. S. charcoal, Chicago...	15.75	15.75	15.75	15.25

Billets, etc.,	Per Gross Ton:			
H. ss billets, Pittsburgh...	21.00	20.50	19.00	25.00
O-h. billets, Pittsburgh...	21.00	20.50	19.00	24.50
O-h. sheet bars, P'gh...	22.00	21.50	19.50	25.00
Forging billets, base, P'gh...	26.00	26.00	25.00	26.00
O-h. billets, Phila.....	23.40	23.40	21.90	27.00
Wire rods, Pittsburgh...	26.00	25.00	24.50	28.00

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Old Material,	Aug. 26,	Aug. 19,	July, 29,	Aug. 27,
Per Gross Ton:	1914.	1914.	1914.	1913.
Iron rods, Chicago....	12.00	12.00	12.00	14.00
Iron rods, Philadelphia....	14.00	14.00	14.00	17.50
Carwheels, Chicago....	11.25	11.25	11.25	12.75
Carwheels, Philadelphia....	11.50	11.50	11.00	12.50
Heavy steel scrap, P'gh.	11.25	11.25	11.50	12.25
Heavy steel scrap, Phila.	10.50	10.50	10.00	11.50
Heavy steel scrap, Ch'go.	9.50	9.75	9.75	10.50
No. 1 cast, Pittsburgh....	11.50	11.50	11.50	12.75
No. 1 cast, Philadelphia....	12.00	12.00	12.00	12.75
No. 1 cast, Ch'go (net ton)	9.50	9.50	9.50	10.75

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bars, calls, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia....	1.17 1/2	1.17 1/2	1.17 1/2	1.37 1/2
Iron bars, Pittsburgh....	1.20	1.20	1.15	1.60
Iron bars, Chicago....	1.07 1/2	1.07 1/2	1.05	1.40
Steel bars, Pittsburgh....	1.20	1.20	1.15	1.40
Steel bars, New York....	1.36	1.36	1.31	1.56
Tank plates, Pittsburgh....	1.20	1.20	1.10	1.40
Tank plates, New York....	1.36	1.36	1.26	1.56
Beams, etc., Pittsburgh....	1.20	1.20	1.15	1.45
Beams, etc., New York....	1.36	1.36	1.26	1.61
Sleip, grooved steel, P'gh.	1.20	1.20	1.15	1.40
Sleip, sheared steel, P'gh.	1.25	1.25	1.20	1.45
Steel hoops, Pittsburgh....	1.30	1.30	1.20	1.50

Sheets, Nails and Wire,

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh.	1.90	1.90	1.80	2.15
Galy. sheets, No. 28, P'gh.	2.90	2.90	2.75	3.20
Wire nails, Pittsburgh....	1.60	1.55	1.55	1.65
Cut nails, Pittsburgh....	1.60	1.60	1.55	1.60
Fence wire, base, P'gh....	1.40	1.35	1.35	1.45
Barb wire, galv., P'gh....	2.00	1.95	1.95	2.05

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$1.70	\$1.70	\$1.75	\$2.50
Furnace coke, future....	1.75	1.75	1.85	2.50
Foundry coke, prompt....	2.25	2.25	2.25	2.90
Foundry coke, future....	2.35	2.35	2.35	3.00

Metals,

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York....	13.00	12.75	13.37 1/2	16.00
Electrolytic copper, N. Y.	12.37 1/2	12.25	13.00	15.62 1/2
Spelter, St. Louis....	5.90	5.60	4.95	5.75
Spelter, New York....	6.05	5.75	5.10	5.90
Lead, St. Louis....	3.72 1/2	3.70	3.75	4.67 1/2
Lead, New York....	3.87 1/2	3.87 1/2	3.90	4.75
Tin, New York....	.39.00	49.00	30.87 1/2	42.60
Antimony, Hallett's, N. Y.	16.00	16.00	6.75	7.75
Tin plate, 100-lb. box, P'gh.	\$3.50	\$3.50	\$3.25	\$3.50

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh, in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22 1/2c.; Kansas City, 42 1/2c.; Omaha, 42 1/2c.; St. Paul, 32c.; Denver, 84 1/2c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal on plates, shapes, etc., is 46c.

Plates.—Tank plates, 1/4 in. thick, 6 1/4 in. up to 100 in. wide, 1.20c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers with extras:

Rectangular plates, tank steel or conforming to manufacturer's standard specifications for structural steel dated February 6, 1903, or equivalent, 1/4 in. and over on thinnest side, 100 in. wide and under, down to but not including 6 in. wide as base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft. are considered 1/4-in. plates. Plates over 72 in. wide must be ordered 1/4 in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gauges under 1/4 in. to and including 3-16 in....	.10
Gauges under 3-16 in. to and including No. 8....	.15
Gauges under No. 8 to and including No. 9....	.25
Gauges under No. 9 to and including No. 10....	.30
Gauges under No. 10 to and including No. 12....	.40
Sketches (including straight taper plates), 3 ft. and over	.10
Complete circles 3 ft. in diameter and over....	.20
Boiler and flange steel	.10
A. R. M. A. and ordinary firebox steel....	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive....	.05
Widths over 110 in. up to 115 in., inclusive....	.10
Widths over 115 in. up to 120 in., inclusive....	.15
Widths over 120 in. up to 125 in., inclusive....	.25
Widths over 125 in. up to 130 in., inclusive....	.50
Widths over 130 in....	.100
Cutting to lengths, under 3 ft. to 2 ft. inclusive....	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive....	.50
Cutting to lengths, under 1 ft....	.155

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, 1/4 in. thick and over, and zees, 3 in. and over, 1.20c. to 1.25c. Extras on other shapes and sizes are as follows:

I-beams over 15 in....	Cents per lb.
H-beams over 18 in....	.10
Angles over 6 in., on one or both legs....	.10
Angles, 3 in. on one or both legs, less than 1/4 in. thick, as per steel bar card, Sept. 1, 1909....	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)....	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909....	.20 to .80
Deck beams and bulb angles....	.30
Hand rail tees....	.75
Cutting to lengths, under 3 ft. to 2 ft. inclusive....	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive....	.50
Cutting to lengths, under 1 ft....	.155
No charge for cutting to lengths 3 ft. and over.	

Wire Products.—Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, \$1.40; galvanized, \$1.80. Galvanized barb wire and fence staples to jobbers, \$2; painted, \$1.60. Wire nails to jobbers, \$1.60. Woven wire fencing, 73 per cent. off list for carloads; 72 off for 1000-rod lots; 71 off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.								
Nos.	0 to 9	10	11	12 & 1/2	13	14	15	16
Annealed	\$1.00	\$1.60	\$1.65	\$1.70	\$1.80	\$1.90	\$2.00	\$2.10
Galvanized	2.00	2.00	2.05	2.10	2.20	2.30	2.70	2.80

Wire Rods.—Bessemer, open-hearth and chain rods, \$26.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe in effect from April 20, 1914, and iron pipe from June 2, 1913, all full weight:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8, 1/4 and 3/8	.73	52 1/2	1/8 and 1/4	.66	47
1/2	.77	66 1/2	3/8	.65	46
3/4 to 3	.80	71 1/2	1/2	.69	56
		71 1/2	2 1/2 to 2 1/2	.72	61

Lap Weld		
2	.77	68 1/2
2 1/2 to 6	.79	70 1/2
7 to 12	.76	65 1/2
13 to 15	.53	2 1/2 to 4
		2 1/2 to 6
		7 to 12

Reamed and Drifted		
1 to 3, butt....	.78	69 1/2
2, lap....	.75	66 1/2
2 1/2 to 6, lap....	.77	68 1/2
		1 1/2, lap
		1 1/2, lap
		2, lap
		2 1/2 to 4, lap

Butt Weld, extra strong, plain ends		
1/8, 1/4 and 3/8	.68	57 1/2
1/2	.73	66 1/2
3/4 to 1 1/2	.77	70 1/2
2 to 3	.78	71 1/2

Lap Weld, extra strong, plain ends		
2	.74	65 1/2
2 1/2	.76	67 1/2
4 1/2 to 6	.75	66 1/2
7 to 8	.68	65 1/2
9 to 12	.63	52 1/2

Butt Weld, double extra strong, plain ends		
1/2	.63	56 1/2
3/4 to 1 1/2	.66	59 1/2
2 to 2 1/2	.68	61 1/2
		2 and 2 1/2

Lap Weld, double extra strong, plain ends		
2	.64	57 1/2
2 1/2	.66	59 1/2
4 1/2 to 6	.65	58 1/2
7 to 8	.58	47 1/2

To the large jobbing trade an additional 5 and 2 1/2 per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads, in effect from May 1, 1914, on steel and from January 2, 1914, on iron, are as follows:

Lap Welded Steel	Standard Charcoal Iron

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Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points. On standard charcoal iron tubes for desirable orders the above discounts are shaded an extra 5, and occasionally two 5's by some makers.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f. o. b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.40 to 1.45
Nos. 9 to 10	1.45 to 1.50
Nos. 11 and 12	1.50 to 1.55
Nos. 13 and 14	1.60 to 1.65
Nos. 15 and 16	1.70 to 1.75

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.55 to 1.65
No. 12	1.55 to 1.65
Nos. 13 and 14	1.60 to 1.70
Nos. 15 and 16	1.65 to 1.75
Nos. 17 to 21	1.70 to 1.80
Nos. 22 and 24	1.75 to 1.85
Nos. 25 and 26	1.80 to 1.90
No. 27	1.85 to 1.95
No. 28	1.90 to 2.00
No. 29	1.95 to 2.05
No. 30	2.05 to 2.15

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.90 to 2.00
No. 12	2.00 to 2.10
Nos. 13 and 14	2.00 to 2.10
Nos. 15 and 16	2.15 to 2.25
Nos. 17 to 21	2.30 to 2.40
Nos. 22 and 24	2.45 to 2.55
Nos. 25 and 26	2.60 to 2.70
No. 27	2.75 to 2.85
No. 28	2.90 to 3.00
No. 29	3.05 to 3.15
No. 30	3.20 to 3.30

Pittsburgh

PITTSBURGH, PA., August 25, 1914.

The amount of new business being placed in shapes, plates, bars, wire products and other forms of finished material, on which prices have been advanced, is relatively small. While the mills are running at as good a gait as in July, it is mostly on contracts taken late in June and early in July, rather than on new business. A feature of the market is the large number of inquiries for plates, bars, wire rods, billets and other material that are being received by local mills from England, Australia, South America, Canada and the Pacific coast. As yet little has been done, but a local maker has sold a small lot of rods for England and 2000 tons of light rails has been sold for export. Some mills are indifferent in regard to foreign business until assured of a full supply of ferromanganese. One steel company that has an inquiry from England for a round tonnage of 4 x 4-in. billets has replied to its prospective customer that if it will agree to furnish ferromanganese the inquiry will have attention and a price will be quoted. It will be some time until conditions have adjusted themselves so that foreign business can be safely taken. Bottoms may be had in a short time, but it will take longer to arrange credits.

Pig Iron.—The Standard Sanitary Mfg. Company has bought about 3000 tons of No. 2 foundry iron for its North Side works and the same amount for its New Brighton plant, or 6000 tons in all, part on the basis of about \$13, Valley furnace, and part at a slightly lower price. There is no new inquiry. We quote: Bessemer, \$14; basic, \$13; malleable Bessemer, \$13; No. 2 foundry, \$13 to \$13.50; gray forge, \$12.75, all at Valley furnace, with a freight rate of 90c. a ton for Cleveland or Pittsburgh delivery.

Ferroalloys.—The flurry in ferromanganese seems to be pretty well over. It is believed that imports from England will start in a short time and relieve the situation. The supply in this country not held by consumers is estimated to be not over 250 tons. Prompt 80 per cent. English ferromanganese has settled down to about \$100 a ton, Baltimore, and a few sales have been made at this price, while several carload lots and one lot of 100 tons for spot shipment have been sold at \$110. A local consumer states that it was offered ferromanganese for indefinite for-

ward delivery at \$60 per ton, but did not buy. As yet prices of ferrosilicon have not shown any change, but are very firm. Local agents are submitting all offers to home offices before closing any business. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at \$73; over 100 tons to 600 tons, \$72; over 600 tons, \$71, delivered in the Pittsburgh district. On 10 per cent. ferrosilicon the quotation is \$19; 11 per cent., \$20, and 12 per cent., \$21, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnace. We quote 20 per cent. spiegeleisen at \$25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

Billets and Sheet Bars.—The steel market has tightened up still more and the Carnegie Steel Company is now quoting Bessemer and open-hearth billets at \$21 and Bessemer and open-hearth sheet bars at \$22, f.o.b. mill. The two leading Youngstown makers are also quoting the same prices, f.o.b. Youngstown. We note a sale of 1000 tons of open-hearth 4 x 4 in. billets, ordinary specifications, at \$21, Pittsburgh; 609 tons of open-hearth sheet bars, ordinary specifications, at \$22, Pittsburgh, and a large consumer of sheet bars in the Niles, Ohio, district has practically closed with a Youngstown interest for the purchase of 12,000 tons for delivery over the remainder of the year, it being understood that the price for September will be \$22, makers' mill, while for the last quarter the price will be adjusted from month to month. The steel market is very strong and it is predicted that billets and sheet bars will be higher in the near future. Prices on forging billets are firm, and we note a sale of 500 tons, carrying only two sizes, made about a week ago at \$25.50, delivered to consumer's mill in the Pittsburgh district, but the market is higher to-day and ordinary forging billets are firm at \$26. Up to August 22, the billet and rail sales bureau of the Carnegie Steel Company reports an increase in orders sent to the mills for rolling of 29,000 tons over the same period in July. This company has adjusted prices on some of its contracts for billets and sheet bars for September delivery at \$1 per ton higher than was paid for August shipment. Steel makers still feel that if the European war is prolonged there will be a famine in ferromanganese, and hence they are inclined to conserve their resources as much as possible. We quote Bessemer and open-hearth billets at \$21, and Bessemer and open-hearth sheet bars at \$22, Pittsburgh or Youngstown, freight added to point of delivery. We quote forging billets at \$26 for desirable orders of one size and up to but not including 10 x 10 in., the regular extras being charged for larger sizes. We quote axle billets at \$24 on desirable orders and \$25 for small lots, f.o.b. Pittsburgh. These prices are only good for prompt acceptance and for shipment within two or three months.

Muck Bar.—There is some inquiry out for muck bar, the first in a long time, and prices are firm. We quote best grades, made from all pig iron, at \$28, delivered to buyers' mills in the Pittsburgh district.

Cotton Ties.—The Carnegie Steel Company is still quoting 72½c. per bundle on the few stray orders for small lots that are being placed, but the season is about over.

Structural Material.—The market continues quiet. While a good many jobs are being talked of, the amount of actual business being done is light. The McClinton-Marshall Company has taken 400 tons for an inspection building for the Pennsylvania Railroad at Paoli, Pa., and W. N. Kratzer & Co. have taken about 350 tons for a public school building in Bellevue. Bids have gone in for a railroad bridge for the Pennsylvania Lines West at Kiskiminetas, Pa., about 3000 tons. The Penn Bridge Company, Beaver Falls, Pa., is low bidder on a bridge at Charlotte, N. Y., 1000 tons. Prices are firm and we quote beams and channels up to 15-in., at 1.20c. f.o.b. maker's mill.

Plates.—Receivers of the Cincinnati, Hamilton & Dayton have placed 1000 all-steel hopper cars with the Cambria Steel Company and 1000 box cars with the Mt. Vernon Car & Mfg. Company. These orders were placed by the purchasing agent of the Baltimore & Ohio, which operates the Cincinnati, Hamilton & Day-

ton, and are contingent upon the proper financial arrangements being made not later than October 3. The receivers of the Cincinnati, Hamilton & Dayton have also placed 35 locomotives with the Lima Locomotive Corporation, Lima, Ohio, under the same conditions as the car orders were placed. Bids are scheduled to go in this week on 4600 miscellaneous cars for the Southern Pacific, but it is felt that the chances are against this order being placed. The Government intends to build in the near future three battleships, one to be built at the Brooklyn navy yard; also six torpedo boat destroyers and two revenue cutters, but as yet no inquiries have come to the plate mills for the material. Owing to the falling off in the oil business, the building of tank work all over the country is light, and the new demand for plates is quiet. The market is only fairly strong at 1.20c., but the local plate mills state they are adhering strictly to this price in quoting on all new orders. So far little actual business has been placed at this level, as consumers were pretty well covered at the 1.10c. and 1.15c. prices that were in force until recently. We quote $\frac{1}{4}$ -in. and heavier plates at 1.20c., f.o.b. maker's mill.

Steel Rails.—Foreign inquiries for steel rails are commencing to come in, and some business has been placed. Australia has an inquiry here for 31,000 tons of standard sections. The Carnegie Steel Company has taken 2000 tons of 20-lb. rails for export, which amount will lay nearly 70 miles of track. The Baltimore & Ohio has placed 2000 tons of standard sections with the Carnegie Steel Company, 2000 tons with the Illinois Steel Company, 6000 tons with the Cambria Steel Company and is expected to buy about 5000 tons more. The new demand for light rails is fairly active, and some inquiries are out from South America, Australia and other foreign countries. Two foreign shipments of rails, one of 13,000 tons from the Maryland Steel Company and one of 8000 tons from the Carnegie Steel Company, the latter destined for Australia, have been held up. So far this month the Cambria Steel Company has booked orders for 32,000 tons of standard sections. We quote standard sections of Bessemer steel at 1.25c. and open-hearth, 1.34c. We quote light rails, rolled from billets, as follows: 25, 30, 35, 40 and 45-lb. sections at 1.15c.; 16 and 20-lb., 1.20c.; 12 and 14-lb., 1.25c., and 8 and 10-lb., 1.30c., in carload lots, f.o.b. Pittsburgh. Rerolled light rails are being quoted at \$1 and \$2 a ton less than the above prices.

Steel Wheels.—It is stated that the Cincinnati, Hamilton & Dayton will use cast-iron wheels on the 2000 cars just placed. We quote 33-in. engine-truck forged steel wheels at \$22.50 to \$24.50; 36-in., \$23.50 to \$25.50; 39-in. tender wheels, \$18.50 to \$19; 36-in. passenger-train car and tender wheels, \$20.50 to \$21, and 33-in. freight-car wheels at \$16 to \$16.50, all f.o.b. Pittsburgh.

Skelp.—Some inquiries for skelp have been received by local mills from England, South America and Australia. One of these is for 5000 tons for shipment to England. Makers are not anxious to quote on this business, fearing a shortage in supply of ferromanganese. The pipe trade is dull and the domestic demand for skelp is quiet, but prices are strong. We quote: Grooved steel skelp, 1.20c.; sheared steel skelp, 1.25c.; grooved iron skelp, 1.55c.; sheared iron skelp, 1.65c., delivered to consumers' mills in the Pittsburgh district.

Iron and Steel Bars.—A fair amount of new business is being placed in iron and steel bars for prompt shipment, and specifications against contracts are coming in quite freely. The steel-bar mills still have a large number of contracts to fill at the 1.10c. price and some at 1.15c., and the amount of new business placed at the 1.20c. price is relatively small. Makers of iron bars report a slightly better demand with prices firm. We quote steel bars at 1.20c., maker's mill, for this and September shipment, and 1.25c. for last quarter. We quote common iron bars, made from scrap and muck bar, at 1.20c., f.o.b. maker's mill, Pittsburgh. Regular extras for twisting reinforcing steel bars over the base price are as follows: $\frac{3}{4}$ -in. and over, \$1; $\frac{1}{2}$ to 11/16-in., \$1.50; under $\frac{1}{2}$ -in., \$2.50 per net ton. These extras are not always observed.

Wire Rods.—An advance of about \$1 per ton in

prices of wire rods has been made and the market is firm. Foreign inquiries are in the market and we note one sale of about 125 tons for shipment to England at \$26, f.o.b. maker's mill. Some inquiry for rods is coming from Canada. The rod market is more active than for some time. One leading maker states it has few rods to spare for the open market, and will not seek foreign business unless attractive prices can be secured. We quote Bessemer, open-hearth and chain rods at \$26, f.o.b. maker's mill, Pittsburgh, but as high as \$26.50 has been named on some recent inquiries.

Sheets.—The new demand for sheets is quite active and mills report that specifications against contracts are fair. Consumers are inclined to take out the full amount of tonnage called for in their contracts, knowing that the mills will cancel promptly anything unshipped. Jobbers and consumers evidently feel that higher prices for sheets are not improbable, and they are trying to cover as far ahead as possible at existing prices. It is stated that for delivery in the last quarter of this year No. 10 blue annealed sheets have sold as high as 1.45c.; No. 28 black, 2c., and No. 28 galvanized, 3c. The excitement in the spelter market is having the effect of firming up prices still more on galvanized sheets, and it is not unlikely that 3c. will be the minimum price for prompt delivery within a short time. We quote Nos. 9 and 10 blue annealed sheets at 1.40c. for this month and September shipment and 1.45c. for last quarter; No. 28 Bessemer black, 1.90c. for August and September and 2c. for last quarter; No. 28 galvanized, 2.90c. for this and next month delivery, and 3c. for last quarter. We quote No. 28 black plate, tin mill sizes, H. R. and A., 1.95c.; Nos. 29 and 30, 2c. The above prices are for carload and larger lots, f.o.b. Pittsburgh, jobbers charging the usual advances for small lots from store.

Tin Plate.—The situation in tin plate is tight and prices are very firm. One leading maker has sold some fairly large lots from stock at \$3.50 to \$3.60 per base box. Another is holding tin plate at \$3.75 and will sell only to its regular customers. While the flurry in pig tin has quieted down to some extent, there is still danger of a shortage, and tin plate makers are strongly inclined to husband their resources. Most of the mills are running as much as they can on terne plate, reserving their supply of pig tin for bright plate to be made later in the year. We quote 100-lb. 14 x 20 coke and terne plates at \$3.50 to \$3.60 for prompt delivery from stock, while on contracts for last quarter up to \$3.75 is quoted. One interest has turned down an offer of \$3.75 for a round lot of bright plate for delivery in the first quarter of 1915.

Hoops and Bands.—A fair amount of new buying is reported, but most consumers are covered up to October 1, and in some cases through last quarter. Specifications against contracts for steel hoops from cooperage shops and other consumers are coming in quite freely. We quote steel bands at 1.20c. and steel hoops at 1.30c., f.o.b. maker's mill, for delivery over the remainder of this year.

Shafting.—The new demand is quiet and for small lots, while specifications against contracts are only fair. Builders of automobiles have had a large falling off in their business, and this is reflected in their specifications for shafting, which are lighter than for some time. All foreign business in shafting has been shut off, and this is also being felt. Prices are firm and we quote cold-rolled shafting at 65 to 66 per cent. off in carload lots, delivered in base territory, 66 per cent. being regarded as absolute minimum of the market.

Spikes.—Only a few stray orders are being placed for small lots, as the railroads are not buying many new rails, and specifications against contracts placed early in the year are only fair. We quote standard sizes of railroad and boat spikes at \$1.40 to \$1.50, and small railroad and boat spikes at \$1.50 to \$1.60 per 100 lb. in carload lots, f.o.b. Pittsburgh.

Merchant Steel.—There is a fair demand for seasonable steels in small lots, but large users, such as the implement makers and wagon builders, covered ahead some time ago and mills report that specifications against these contracts are only fair. The implement

trade this year has not been good, and this is reflected in a more than usual quiet demand for implement making steels. In sympathy with the higher prices on billets and finished materials, prices are firm, some mills asking an advance of at least \$1 per ton. Prices on small lots are about as follows: Iron finished tire, $\frac{1}{2} \times 1\frac{1}{2}$ in. and larger, 1.30c., base; under $\frac{1}{2} \times 1\frac{1}{2}$ in., 1.45c.; planished tire, 1.50c.; channel tire, $\frac{3}{4}$ to $\frac{5}{8}$ and 1 in., 1.80c. to 1.90c.; 1 $\frac{1}{2}$ in. and larger, 1.90c.; toe calk, 1.90c. to 2c., base; flat sleigh shoe, 1.65c.; concave and convex, 1.70c.; cutter shoe, tapered or bent, 2.20c. to 2.30c.; spring steel, 1.90c. to 2c.; machinery steel, smooth finish, 1.70c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1 $\frac{1}{2}$ in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.25c.; soft, 3.50c.; coils, hard, 3.15c.; soft, 3.40c.; freight allowed. The usual differentials apply for lighter sizes.

Wire Products.—The leading makers have all advanced prices on wire products \$1 per ton, so that the market is now on the basis of \$1.60 for wire nails and \$1.40 for plain wire. No new business of moment has yet been taken at the higher prices, but specifications on contracts are coming to the mills at a fair rate. Discounts on woven wire fencing have been lowered $\frac{1}{2}$ point. There is some inquiry for wire nails from Canada and South America, but as yet no actual business has been taken. On new orders we quote wire nails at \$1.60; plain annealed wire, \$1.40; galvanized barb wire and fence staples, \$2; painted barb wire, \$1.60; all f.o.b. Pittsburgh, freight added to point of delivery, terms 30 days net, less 2 per cent. off for cash in 10 days. We quote steel cut nails at \$1.60 to \$1.65, f.o.b. Pittsburgh, in carload lots. We quote woven wire fencing at 73 per cent. off in carload lots, 72 off on 1000-rod lots, and 71 per cent. on smaller lots, all f.o.b. Pittsburgh.

Nuts, Bolts and Rivets.—The new demand is quiet and only for small lots, jobbers and consumers being covered on their needs for the remainder of this year. Makers state that specifications are only fair. Prices are firm and discounts are being more firmly held than for some time. We quote buttonhead structural rivets in carload lots at 1.55c. and on small lots, 1.65c.; cone-head boiler rivets, 1.65c. in carload lots, and 1.70c. in small lots; terms, 30 days net, 2 per cent. off for cash in 10 days. Discounts on nuts and bolts are as follows in lots of 300 lb. or over, delivered within a 20c. freight radius of maker's works:

Coach and lag screws.....	\$0 and 5% off
Small carriage bolts, cut threads.....	80 and 5% off
Small carriage bolts, rolled threads.....	80 and 5% off
Large carriage bolts.....	75 and 5% off
Small machine bolts, cut threads.....	80 and 5% off
Small machine bolts, rolled threads.....	80 and 10% off
Large machine bolts.....	75 and 10% off
Machine bolts, c.p.c. & t nuts, small.....	80% off
Machine bolts, c.p.c. & t nuts, large.....	75 and 5% off
Square h.p. nuts, blank and tapped.....	\$6.30 off list
Hexagon nuts.....	\$7.20 off list
C.F.C. and r sq. nuts, blank and tapped.....	\$6.00 off list
Hexagon nuts, $\frac{3}{4}$ in. and larger.....	\$7.20 off list
Hexagon nuts, smaller than $\frac{1}{4}$ in.....	\$7.80 off list
C.P. plain square nuts.....	\$5.50 off list
C.P. plain hexagon nuts.....	\$5.90 off list
Semi-fin. hex. nuts, $\frac{1}{2}$ in. or under.....	85, 10 & 10% off
Semi-fin. hex. nuts, $\frac{3}{4}$ in. and larger.....	85 & 5% off
Rivets, 7/16 x 6 $\frac{1}{2}$, smaller & shorter.....	80, 10 & 5% off
Rivets, tin plated, packages.....	80, 10 and 5% off
Rivets, metallic tinned, packages.....	80, 10 and 5% off
Standard cap screws.....	70, 10 and 10% off
Standard set-screws.....	75, 10 and 10% off

Standard Pipe.—The demand for tubular goods so far in August, except for oil-country goods, has been better than in July, and this to some extent offsets the heavy decline in demand for oil-well supplies. The oil trade is badly demoralized and the demand for oil-country goods has almost stopped. Under present financial conditions it is almost impossible to finance any large gas or oil line projects, and as a result there are no inquiries in the market for line pipe. Discounts on iron and steel pipe are being more firmly held than for some time.

Boiler Tubes.—There is a fair demand for merchant tubes, but locomotive tubes are dull, as many of the locomotive shops are doing very little. Prices continue to be more or less shaded.

Old Material.—The sale of a round lot of heavy melting steel to the principal local consumer is the only transaction of importance. Borings can be sold at about \$8.25 per ton, but dealers say they cannot get them for less than that price and hence little is being done in

them. Dealers also state that they are afraid to go short for fear prices may take an upward turn at any time. The market is fairly steady. For delivery to consumers' mills in the Pittsburgh and nearby districts, that take the same rates of freight, prices are about as follows:

Selected heavy steel melting scrap, Steubenville, Foillansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery.....	\$11.50 to \$11.75
Ordinary steel melting scrap.....	11.25 to 11.50
Compressed side and end sheet scrap.....	10.00 to 10.25
No. 1 foundry cast.....	11.50 to 11.75
No. 2 foundry cast.....	10.25 to 10.50
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district.....	8.25 to 8.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	
No. 1 railroad malleable stock.....	12.75 to 13.00
Railroad grate bars.....	11.00 to 11.25
Low phosphorus melting stock.....	10.25 to 10.50
Iron car axles.....	14.25 to 14.50
Steel car axles.....	22.50 to 23.00
Locomotive axles, steel.....	15.50 to 16.00
No. 1 busheling scrap.....	20.00 to 20.50
No. 2 busheling scrap.....	10.25 to 10.50
Machinist shop turnings.....	7.25 to 7.50
Old carwheels.....	7.75 to 8.00
Cast-iron borings.....	11.25 to 11.50
+Sheet bar crop ends.....	8.25 to 8.50
Old iron rails.....	12.00 to 12.25
No. 1 railroad wrought scrap.....	13.75 to 14.00
Heavy steel axle turnings.....	11.50 to 11.75
Heavy breakable cast scrap.....	8.50 to 8.75
	11.25 to 11.50

†Shipping point.

Coke.—The local market is quiet. Best grades of blast furnace coke for prompt shipment can be had at \$1.70 to \$1.75 per net ton at oven. One or two makers are holding their coke on contracts for remainder of the year delivery at \$1.85 to \$1.90, but frankly say they are not getting any business. Best makes of 72-hr. foundry coke are held at \$2.18 to \$2.25 for prompt shipment and from \$2.35 to \$2.40 for forward delivery. The output of coke in the upper and lower Connellsville regions for the week ended August 15 was 257,340 net tons, a decrease over the previous week of 6730 tons.

Chicago

CHICAGO, ILL., August 26, 1914.—(By Wire.)

With the rate of interest continuing at 7 per cent., larger business projects are being halted because of financial considerations. At the same time it is felt that some progress has been made in relieving the money stringency, and bankers state that the regular requirements of customers are being met freely. The lack of inquiry is noticeable in the matter of railroad requirements and the larger building projects. The only architectural work of importance for which figures are being taken is the Mannheimer building at St. Paul, requiring 3700 tons. Business of a routine character appears less disturbed, and in the case of sheets the demand has been exceedingly heavy. There are indications that sheet orders have been liberal for the purpose of building up stocks in anticipation of the higher prices which have already been realized to the extent of \$4 per ton. The advance of \$1 per ton in wire products has become general, and with spring dating now available orders are being received in substantial volume. In the pig-iron market some of the Southern brands appear to have been strengthened by sales in the South but Northern irons have felt the pressure of the recent Southern freight reduction and sales as low as \$13.50 at the furnace have been made. There is no apparent improvement in the scrap market.

(By Mail)

Pig Iron.—The confusion that has arisen out of the revised freight rate from Southern furnaces to Chicago, together with the pressure applied by customers on the strength of that reduction, has forced some concessions in the price of Lake irons. The level of \$14 at the furnace, which had been held for a considerable period, has been forced down in competitive territory by approximately the amount of the freight reduction. There is no great amount of inquiry for fourth quarter delivery and the interest in next year's iron is noticeably backward. There appears to be nothing in the situation to invite the special interest of melters as the entire market lacks animation. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron,

which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal	\$15.75 to \$16.75
Northern coke foundry, No. 1	14.00 to 14.50
Northern coke foundry, No. 2	13.50 to 14.00
Northern coke foundry, No. 3	13.25 to 13.75
Southern coke, No. 1 f'dry and 1 soft	14.85 to 15.10
southern coke, No. 2 f'dry and 2 soft	14.35 to 14.60
Malleable Bessemer	14.00 to 14.25
Standard Bessemer	17.00
Basic	13.25 to 13.50
Low phosphorus	21.00 to 21.75
Jackson Co. and Ky. silvery, 6 per cent.	16.90 to 17.40
Jackson Co. and Ky. silvery, 8 per cent.	17.90 to 18.40
Jackson Co. and Ky. silvy, 10 per cent.	18.90 to 19.40

Rails and Track Supplies.—The railroads have again assumed an exceedingly conservative attitude as regards purchases, giving as a reason the unfavorable financial situation. Some small orders for light rails are noted. We quote standard railroad spikes at 1.50c. to 1.60c., base; track bolts with square nuts, 1.90c. to 2c., base, all in carload lots, Chicago; tie plates, \$25.50 to \$26, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

Structural Material.—Inquiry representing new projects involving structural material is exceedingly light, especially work requiring heavy material. The Mannheimer building at St. Paul, requiring 3700 tons, is an exception. The Mt. Vernon Car Mfg. Company and the Cambria Steel Company shared in the distribution of 2000 cars by the Cincinnati, Hamilton & Dayton Railroad, conditional upon the necessary financing. Contracts placed for fabricated steel include 574 tons for street car underframes for the Chicago surface lines to the J. G. Brill Company; 535 tons for the Chicago municipal machine shop to the Modern Steel Structural Company; 250 tons for the Colfax-Larimer Viaduct, Denver, Col., to the Vulcan Sheet Metal Company; 252 tons for a pavilion at San Francisco to the Golden Gate Iron Works; 230 tons for a highway bridge at Franklin, Wash., to the Minneapolis Steel & Machinery Company; 106 tons for a highway bridge near Sargent, Cal., to the American Bridge Company; 156 tons for a court house at Seattle, to the Seattle Construction & Dry Dock Company; 106 tons for the Lake Superior Iron & Chemical Company at Ashland, Wis., to the Cadillac Machine Company, Cadillac, Mich.; 322 tons of bridge steel for the Northern Pacific Railway. Specifications against contracts continue very good and there is little question that the entire tonnage contracted for at 1.10c. and 1.15c., Pittsburgh, will be taken out. Users appear to be buying very little tonnage for stock. Some of the larger fabricators appear quite willing to contract for the remainder of the year at 1.20c., but 1.25c., Pittsburgh, is being asked very generally for the last quarter. For prompt shipment we quote for Chicago delivery, from mill, 1.38c.

Trade out of store is making a better showing in the lighter than in the heavier sizes. Prices are unchanged and we quote for Chicago delivery, from store, 1.75c.

Plates.—For the heavier plates, the buying of which represents car work or other projects involving considerable financing, there is but little demand. Lighter material for more general manufacturing purposes is being specified in larger tonnage. Prices are being maintained with practically no irregularities despite the limited volume of business. We quote for Chicago delivery, from mill, 1.38c.

We quote for Chicago delivery of plates, from jobbers' stock, 1.75c.

Sheets.—The buying of sheets has developed into a substantial movement and local mills find little cause for worry in their bookings for some months to come. Prices are firm at the new levels and the sheet trade in general appears to be in a very satisfactory condition except for the fact that a large portion of the business now on mill books was taken at prices in which there is little or no profit. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.63c.; No. 28 black, 2.18c.; No. 28 galvanized, 3.18c.

We quote for Chicago delivery from jobbers' stock as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.35c.; No. 28 galvanized, 3.55c.

Bars.—There has been little change in the bar-iron market except for a slight firming up in prices at the 1.07½c. level. Sales are limited. Steel bars are being specified in only moderate volume. We quote for mill shipments as follows: Bar iron, 1.07½c. to 1.10c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c., base, with 5c. extra for twisting in sizes $\frac{1}{2}$ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off.

Rivets and Bolts.—Manufacturers of rivets find their endeavors to bolster up the market in the face of the large production crowned with but little success. Business of ordinary desirability can be placed on the basis of 1.50c., Pittsburgh. Bolt and nut transactions present no special features of interest, the market remaining about as last quoted, although the resistance that would be offered to the making of concessions for attractive business is still questionable. We quote from mill as follows: Carriage bolts up to $\frac{3}{4}$ x 6 in., rolled thread, 85; cut thread, 80-5; larger sizes, 80; machine bolts up to $\frac{3}{4}$ x 4 in., rolled thread, 85-5; cut thread, 85; larger sizes, 80-5; coach screws, 85-10; hot pressed nuts, square head, \$6.60 off per cwt.; hexagon, \$7.60 off per cwt. Structural rivets, $\frac{1}{2}$ to $\frac{1}{4}$ in., 1.58c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 2.20c.; boiler rivets, 2.30c.; machine bolts up to $\frac{3}{4}$ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to $\frac{3}{4}$ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square head, \$6, and hexagon, \$6.70 off per cwt.

Wire Products.—Spring dating is now available to buyers of wire. Orders during the past week, particularly for fencing, are reported as exceedingly satisfactory from the mill standpoint. Coupled with this attractive volume of business, the further advance of \$1 a ton now effective in the quotations of all the principal producers makes for a good position for the entire trade. We have revised our prices and quote to jobbers as follows: Plain wire, No. 9 and coarser, base, \$1.58; wire nails, \$1.78; painted barb wire, \$1.78; galvanized, \$2.18; polished staples, \$1.88; galvanized, \$2.28, all Chicago.

Old Material.—Interest in the acquisition of scrap by melters has so far subsided and purchases are so few that trading quotations are much more common than actual sales prices. Buyers find themselves able to name practically their own figures and little effort is being made to force material on the market. We quote, for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton
Old iron rails	\$12.00 to \$12.50
Old steel rails, rerolling	11.50 to 11.75
Old steel rails, less than 3 ft.	10.25 to 10.50
Relaying rails, standard section, subject to inspection	22.00 to 23.00
Old carwheels	11.25 to 11.50
Heavy melting steel scrap	9.50 to 9.75
Frogs, switches and guards, cut apart	9.50 to 9.75
Shoveling steel	9.00 to 9.25
Steel axle turnings	6.75 to 7.25

	Per Net Ton
Iron angles and splice bars	\$12.00 to \$12.25
Iron arch bars and transoms	12.00 to 12.25
Steel angle bars	8.75 to 9.25
Iron car axles	16.25 to 16.75
Steel car axles	11.75 to 12.25
No. 1 railroad wrought	8.75 to 9.25
No. 2 railroad wrought	8.50 to 8.75
Cut forge	8.50 to 8.75
Steel knuckles and couplers	9.00 to 9.50
Steel springs	9.25 to 9.75
Locomotive tires, smooth	9.50 to 9.75
Machine shop turnings	5.00 to 5.50
Cast borings	4.50 to 5.00
No. 1 busheling	7.50 to 7.75
No. 2 busheling	6.00 to 6.25
No. 1 boilers, cut to sheets and rings	6.50 to 7.00
Boiler punchings	9.25 to 9.75
No. 1 cast scrap	9.50 to 9.75
Stove plate and light cast scrap	8.75 to 9.00
Grate bars	8.50 to 8.75
Railroad malleable	8.75 to 9.00
Agricultural malleable	8.00 to 8.25
Pipes and flues	6.25 to 6.50

Cast-Iron Pipe.—Advertised lettings have been few in number for several weeks, and the placing of 1000 tons at Knoxville, Iowa, with the American Cast Iron Pipe Company is the only recent award of importance.

Highland Park, Mich., is in the market for 600 tons of 36-in., and Kansas City, Mo., will buy 1200 tons. The postponed letting at Casper, Wyo., has been reinstated and figures will be taken September 1, covering 1500 tons. We quote as follows, per net ton, Chicago: Water pipe, 4 in., \$26; 6 to 12 in., \$24; 16 in. and up, \$23.50, with \$1 extra for gas pipe.

Philadelphia

PHILADELPHIA, PA., August 25, 1914.

Business, with few exceptions, shows little betterment. In some branches new orders have been less in evidence. Consumers have largely covered, both in the way of specifications and new orders, for their near future requirements and are now awaiting developments. More or less foreign inquiry is before the trade, but developments move slowly, owing to unsatisfactory arrangements in connection with finances and shipping facilities. The situation in ferroalloys is somewhat easier, promised resumptions of shipments of ferromanganese having lessened the anxiety as to supplies and, while there is little surplus metal available, less disposition is shown to force prices to an exorbitant level. Mill operations have been pretty well maintained, although the extreme heat has perhaps affected the actual tonnage output. The pig-iron market has been quiet and prices remain unchanged. Future business in finished materials is largely dependent on developments in connection with the European war. There is little doubt, however, that as soon as satisfactory financial arrangements are made our mills will be favored with considerable business heretofore taken by foreign manufacturers. Considerable business is then to be expected from South America. The rush of demand from the Pacific coast appears to have abated, no fresh orders being reported in this district. Steel billets have been a trifle more active. A strong movement in sheets is noted, with prices advancing. Coke is quiet. Old material is stronger, holders being disinclined to let supplies go at present figures.

Iron Ore.—Some movement in New Jersey ores is reported, but there has been no new business in foreign ores. Part cargoes, recently offered, found no ready buyers. The mining of Wabana ore in Newfoundland has been suspended. Large tonnages of that ore have been sold to German consumers, delivery on which has been stopped by the war. There were no sales of Wabana ore in this market for this year's delivery, current shipments being on contracts not fully taken last season. One more cargo of Wabana ore will come down this season. Imports for the week ended August 22 included 6500 tons from Newfoundland, 6400 tons from Chile and 7200 tons from Cuba.

Pig Iron.—The movement continues light. In some grades it is practically at a standstill, while in others small lots make up the bulk of the business. Buyers appear to be pretty well covered for the near future and some for the remainder of the year and sellers are making no particular effort to force sales, but are taking care of current needs of customers, being inclined to await developments rather than sell ahead at current prices. In foundry grades, which embrace the principal sales, prices remain stationary, although several makers recently advanced their quotations 25c. to 50c. above what might be termed the general market and make occasional light sales at the advance. Contracts for 100 tons of No. 1 and 50 tons of No. 2 plain, with silicon 2 to 2.50 per cent., for the Navy Yard were awarded to a Lehigh Valley maker at \$14.90 and \$14.75, delivered, respectively. The Pennsylvania Railroad is reported to have placed orders against its inquiry for 500 to 1100 tons of Lake Superior charcoal iron, but has not fully decided upon its requirements for coke foundry iron. Producers of Virginia foundry iron report small sales. Cast-iron pipe makers have been taking on odd lots of low grade foundry iron, but there appears to be no tonnage movement. Rolling-mill forge remains quiet and there has been little call for special grades of iron. Basic iron is uncalled for; in fact, one seller canceled a block of iron which was

sold some time ago, on which the buyer endeavored to have delivery extended. Sales of standard analysis low-phosphorus pig have been made in small lots at \$21 and \$21.50, delivered here. The following range is named for standard brands, for early delivery, in buyers' yards in this district:

Eastern Penna. No. 2 X foundry.....	\$14.75 to \$15.00
Eastern Penna. No. 2 plain.....	14.50 to 14.75
Virginia No. 2 X foundry.....	15.30 to 15.50
Virginia No. 2 plain.....	15.05 to 15.25
Gray Forge	13.75 to 14.00
Basic (nominal)	14.00
Standard low phosphorus.....	21.00 to 21.50

Ferroalloys.—Less anxiety is apparent regarding the supply of foreign ferromanganese. English makers have considerable stocks of metal and ores and anticipate at least partial resumption of shipments next month. Consumers have made arrangements for their immediate needs, but are conserving their supply. Purchases of spiegeleisen will enable a number of consumers to tide over. While there have been no offerings of fresh supplies of foreign ferromanganese, efforts being largely toward taking care of deliveries against existing contracts, reports are to the effect that moderate lots may be offered before very long at prices based on present conditions of about \$100 per ton, seaboard. Forty per cent. domestic ferromanganese continues to be offered. Spiegeleisen is scarce and prices of 19 to 21 per cent. have been quoted up to \$36 at furnace. Imports of ferromanganese at this port last week were confined to 206 tons from England.

Bars.—Little change in the situation is noted. Moderate business prevails in steel bars at 1.35c., delivered here, while good specifications against contracts come out. Somewhat better sales of iron bars are reported at unchanged prices, namely, 1.15c. to 1.20c. for ordinary bars, delivered in this vicinity. Mill operations still continue on an irregular basis.

Plates.—Business is reported as rapidly improving with the principal Eastern mills, some of which will average about 90 per cent. of capacity for the month. Foreign inquiries are beginning to come in, as well as more inquiries from domestic buyers. On general miscellaneous business makers adhere to 1.35c. to 1.40c., delivered here, but on tonnage business 1.30c. here could probably still be done.

Structural Material.—New business has been on a smaller scale, which some sellers attribute to the recent advances. August promises a pretty good month, as far as tonnage is concerned, due largely to heavy specifications. Mill operations are fairly well covered for the next 30 days. The 350 tons for the Paoli Inspection Building for the Pennsylvania Railroad has been awarded to an independent fabricator. Bids go in shortly on a bridge, approximately 1000 tons, for the same road, while the trade is interested in the opening of bids this week on a larger bridge proposition in the western part of the State. Prices of plain shapes are unchanged, 1.35c. to 1.40c. being named for current miscellaneous business.

Billets.—More inquiry has come out from both foreign and domestic consumers, but little business has resulted beyond small orders. The foreign demand includes tonnage business from Scotland, Sweden and Japan, none of which is understood to have been closed. Domestic demand seldom exceeds a few hundred tons. Makers are not disposed to sell ahead and Eastern mills hold at \$23.40, delivered here, for basic open-hearth rolling steel, with forging billets commanding \$4 to \$5 advance, according to specification.

Sheets.—There has been a decidedly broader demand and makers are pushed to make deliveries satisfactory to customers. Buyers would place contracts for extended deliveries, but makers refuse to do so. Some makers now consider two to three weeks prompt delivery. Specifications against old orders have been heavier and producers have again advanced prices for new business, 1.65c. here now being the minimum quoted by Eastern mills for No. 10 blue annealed sheets for reasonably early shipment.

Old Material.—The market continues to develop strength. Holders of supplies of various grades of material are refusing to let go at current prices. This

has caused some delay in deliveries against contracts by brokers. There has been no further movement in No. 1 heavy melting steel, but prices are strong. Wrought-iron pipe has been in better demand and prices have hardened. Small lots of No. 1 wrought iron have been sold at \$12.50. Rolling mills are more inclined to make inquiries, but so far the demand has not been substantiated by purchases. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania, and taking freight rates from 35c. to \$1.35 per gross ton, are as follows:

No. 1 heavy melting steel.....	\$10.50 to \$11.00
Old steel rails, rerolling.....	12.00 to 12.50
Low phosphorus heavy melting steel scrap.....	14.00 to 14.50
Old steel axles.....	14.75 to 15.25
Old iron axles (nominal).....	20.00 to 21.00
Old iron rails.....	14.00 to 14.50
Old carwheels.....	11.50 to 11.75
No. 1 railroad wrought.....	12.50 to 13.00
Wrought-iron pipe.....	10.50 to 11.00
No. 1 forge fire.....	8.00 to 8.50
Bundled sheets.....	8.00 to 8.50
No. 2 light iron.....	5.00 to 5.50
No. 2 busheling.....	8.00 to 8.50
Wrought turnings.....	8.00 to 8.50
Cast borings.....	8.50 to 9.00
No. 1 cast.....	12.00 to 12.50
Grate bars, railroad.....	8.00 to 8.50
Stove plate.....	8.25 to 8.75
Railroad malleable.....	9.00 to 9.50

Coke.—The market for both furnace and foundry coke remains quiet. Occasional contracts for 72-hr. foundry coke have been closed at \$2.40 to \$2.65 at oven, according to grade. Furnace coke is dull at \$1.75 to \$1.85 per net ton at oven.

Buffalo

BUFFALO, N. Y., August 25, 1914.

Pig Iron.—New business is at a minimum, but heavy shipments are going out on contracts. One furnace interest reports shipping over 50 carloads in one day the first of this week. Prices are more firmly held by producers and a small amount of business is being placed at the advanced figures. There has been an advance of 50c. per ton on most of the regular grades of charcoal iron since last week on account of increasing scarcity. Canadian business is more or less demoralized owing to the situation created by the war, with absolutely no new demand. We quote as follows f.o.b. furnace for last half delivery:

No. 1 foundry.....	\$13.50 to \$14.25
No. 2 X foundry.....	13.25 to 14.00
No. 2 plain.....	13.00 to 13.75
No. 3 foundry.....	13.00 to 13.25
Gray forge.....	13.00 to 13.25
Malleable.....	13.25 to 14.00
Basic.....	14.00 to 14.25
Charcoal, regular brands and analysis.....	16.25 to 17.25
Charcoal, special brands and analysis.....	20.50

Finished Iron and Steel.—Minimum quotations are at 1.20c., Pittsburgh base, on bars, plates and shapes for desirable tonnages and prompt specification. For business in small lots and for quick shipment 1.25c. is obtained. No quotations are made on new fourth quarter business and the policy of some selling agencies is to restrict all quotations to established customers. This is due to the uncertainty regarding ferromanganese. In tin plate prices of \$3.40 to \$3.50 are obtainable for stock shipments which sold prior to the declaration of war at \$3.20 to \$3.25. Wire prices are strong at 1.40c. for fence wire and 1.60c. for nails—and export prices have advanced approximately \$3 per ton. Canadian business is quiet. Practically all agricultural implement concerns in Canada are closed down, owing to the crop conditions in the Northwest, which are not especially favorable in some portions and the shutting off of the main portion of their export orders. Structural steel fabricators are busy on work in hand, to fully 75 per cent. of capacity, but new business is not coming out in sufficient volume to enable them to continue operations on this basis. The Lackawanna Bridge Company has the contract for 100 tons of steel for the First Baptist Church, Jamestown, N. Y., and 100 tons for the Walker store and office building, Erie, Pa. The Lackawanna Steel Company has 1000 tons for the Bronx, New York, high school.

Old Material.—The market remains with prices still firm and no break in any line except in No. 1 railroad and machinery cast scrap which is 25c. per ton lower. Dealers consider the outlook as favorable to somewhat higher prices within a short time, although the feeling of uncertainty caused by the war is still a ruling factor. We quote as follows per gross ton f.o.b. Buffalo:

Heavy melting steel.....	\$10.25 to \$10.50
Low phosphorus steel.....	14.00 to 14.50
Boiler plate sheared.....	11.50 to 12.00
No. 1 railroad wrought scrap.....	10.00 to 10.50
No. 1 railroad and machinery cast.....	10.25 to 10.75
Old steel axles.....	12.50 to 13.00
Old iron axles.....	19.50 to 20.00
Old carwheels.....	11.00 to 11.50
Railroad malleable.....	9.25 to 9.75
Machine shop turnings.....	5.50 to 6.00
Heavy axle turnings.....	7.50 to 8.25
Clean cast borings.....	6.00 to 6.50
Old iron rails.....	13.00 to 13.75
Locomotive grate bars.....	8.50 to 9.00
Stove plate (net ton).....	9.00 to 9.75
Wrought pipe.....	7.50 to 8.00
Bundled sheet scrap.....	6.25 to 6.50
No. 1 busheling scrap.....	8.25 to 8.75
No. 2 busheling scrap.....	5.75 to 6.25
Bundled tin scrap.....	10.50

Cleveland

CLEVELAND, OHIO, August 25, 1914.

Iron Ore.—Two or three inquiries for fairly good sized lots of ore have come out and will probably result in the placing of orders within the next few days. This business will come from consumers who have been holding off but who have now come into the market to fill out requirements until the opening of navigation next year. Some other furnace interests are expected to need additional ore, but as most consumers are well supplied, the amount that will be sold in time for shipment before the close of navigation will not be large. We quote prices as follows: Old range Bessemer, \$3.75; Mesaba Bessemer, \$3.50; old range non-Bessemer, \$3; Mesaba non-Bessemer, \$2.85.

Pig Iron.—A Cleveland interest reports the sale of about 5000 tons of foundry and malleable iron for delivery outside of this immediate territory, the largest lot being about 2000 tons. The delivery of some of this iron is to be extended through the first quarter of next year, an advance in price of 50 cents a ton being paid for delivery after January 1. One or two consumers are feeling the market for prices for basic iron for delivery in the first half, but sellers generally are unwilling to quote for that delivery. The market is exceedingly dull. The foundry situation has shown practically no change in the past few weeks and foundries are inclined to await developments in business conditions before making additional purchases. We quote, delivered Cleveland, as follows:

Bessemer.....	\$14.90
Basic.....	\$13.75 to 13.90
Northern No. 2 foundry.....	13.75
Southern No. 2 foundry.....	14.60
Gray forge.....	13.25
Jackson Co. silvery, 8 per cent. silicon.....	17.55
Standard low phosphorus, Valley furnace.....	20.25

Coke.—The market is practically lifeless. There is no demand for furnace coke and sales of foundry grades are limited to very small lots, nearly all consumers being under contract. Standard foundry coke is quoted at \$2.35 to \$2.50 per net ton at oven for spot shipment and for contract. We quote furnace coke at \$1.70 to \$1.75 for prompt shipment.

Finished Iron and Steel.—A good volume of business both in current orders and specifications is coming out, although the market is not quite so active as during the previous two weeks. Prices are firm and are being well maintained at 1.20c. on steel bars, plates and structural material. Iron bars are slightly firmer, the ruling quotations being 1.25c. to 1.30c. for local delivery. Prices for outside shipment are still irregular. Some contracts for steel bars, plates and structural material are being placed at 1.20c. for the remainder of the third quarter and at 1.25c. for the last quarter. Consumers generally want to cover for their last quarter requirements and those already under contract are taking care to specify all the steel due them in monthly installments so that no portions of their contracts will be cancelled. Some of the mills are not inclined to

take on much tonnage for future delivery. In manufactured lines some business has already developed that is attributed directly to the war and a local mill agency has received an inquiry for a round tonnage of angles and 50 tons of plates for shipment to Norway. Structural material is in good demand for small building work and there is more large work in prospect than for some time. The sheet market is very active, both in specifications and in inquiries, and prices are firm at 1.95c. for No. 28 black, 2.90c. for No. 28 galvanized and 1.45c. for No. 10 blue annealed in car lots. Some mills will take orders for future delivery at these prices. Warehouse prices on sheets have been advanced. Stock prices are 1.80c. for steel bars and 1.90c. for plates and structural material.

Bolts, Nuts and Rivets.—The market is stiffening up, although shading of current quotations for desirable orders has not entirely disappeared. Makers expect that a good market will develop in South America where the trade has been supplied by English, German and Belgian makers. Rivets are firm at 1.50c. for structural and 1.60c. for boiler rivets. We quote discounts as follows: Common carriage bolts, $\frac{3}{8}$ x 6 in., smaller or shorter, rolled thread, 80 and 20 per cent.; cut thread, 80 and 15 per cent.; larger or longer, 75 and 15 per cent.; machine bolts with h. p. nuts, $\frac{3}{8}$ x 4 in., smaller or shorter, rolled thread, 80 and 25 per cent.; cut thread, 80 and 20 per cent.; larger or longer, 80 per cent.; coach and lag screws, 80 and 25 per cent.; square h. p. nuts, blank or tapped, \$6.30 off; hexagon h. p. nuts, blank or tapped, \$7.20 off; c. p. c. and t. square nuts, blank or tapped, \$6 off; hexagon, $\frac{5}{8}$ in. and larger, \$7.20 off; 9/16 in. and smaller, \$7.80 off; semi-finished hexagon nuts, $\frac{5}{8}$ in. and larger, 85, 10 and 5 per cent.; 9/16 in. and smaller, 85, 10, 10 and 5 per cent.

Old Material.—The market is very dull but dealers are looking for a change for the better and are unwilling to sell short at present prices. Both local and Youngstown mills are holding back on shipments and one Sharon mill is not accepting material. There is a large amount of scrap on the market and round lots can be purchased at current prices. Heavy melting steel scrap is slightly weaker in the local market and Youngstown mills are now offering only \$11 to \$11.50 for this grade. Other price quotations are unchanged. We quote, f.o.b. Cleveland, as follows:

<i>Per Gross Ton</i>	
Old steel rails, rerolling	\$11.50 to \$12.00
Old iron rails	13.00 to 13.50
Steel car axles	15.00 to 15.25
Heavy melting steel	10.00 to 10.25
Old carwheels	11.25 to 11.50
Relaying rails, 50 lb. and over	23.00 to 25.00
Agricultural malleable	8.50 to 9.00
Railroad malleable	10.25 to 10.75
Light bundled sheet scrap	7.50 to 8.00

<i>Per Net Ton</i>	
Iron car axles	\$17.00 to \$17.25
Cast borings	5.75 to 6.00
Iron and steel turnings and drillings	5.25 to 5.50
Steel axle turnings	6.75 to 7.25
No. 1 busheling, new	8.25 to 8.50
No. 1 busheling, old	8.25
No. 1 railroad wrought	8.50 to 10.00
No. 1 cast	10.50 to 10.75
Stove plate	7.50 to 8.00

Cincinnati

CINCINNATI, OHIO, August 26, 1914.—(By Wire.)

Pig Iron.—The small amount of business under negotiation for foundry iron for the past week probably breaks all records in this market. This is also true as to the consumption of iron by jobbing foundries making a specialty of castings for machine-tool makers. The stove foundries are doing better and are using about the usual quantity for the season. Inquiries are scarce and are for only small tonnages. In many instances it is thought that these have been put out by buyers to keep in touch with the market. Sales are limited to carload lots with the exception of a few orders received from Indiana and a 600-ton lot sold to a central Ohio melter, which inquiry was mentioned last week. The Southern Railway Company will buy this week 500 tons of mixed Southern foundry iron for one of its shops. A little more interest is taken in malleable, and there are two inquiries out for 500 tons each from central Ohio and

Indiana manufacturers. Malleable is now to be had at \$13, Ironton, for this year's shipment, the same price being quoted on No. 2 foundry. Basic appears to be firmer, but it is problematical as to what quotations would be made on a bona fide inquiry. The consumers of basic are holding back, doubtless due to fairly large stocks on hand together with the uncertainty existing as to a future supply of ferromanganese. Southern furnace interests have not been able to definitely establish \$10.25, Birmingham, as a minimum prompt shipment price, as a few interests are making offers 25c. below this figure. A lot of 600 tons of Lake Superior charcoal iron was sold to a central Western melter for this year's shipment. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft.	\$13.75 to \$14.25
Southern coke, No. 2 f'dry and 2 soft.	13.25 to 13.75
Southern coke, No. 3 foundry	12.75 to 13.25
Southern No. 4 foundry	12.25 to 12.75
Southern gray forge	11.75 to 12.25
Ohio silvery, 8 per cent. silicon	17.20 to 17.70
Southern Ohio coke, No. 1	15.20 to 15.70
Southern Ohio coke, No. 2	14.20 to 14.70
Southern Ohio coke, No. 3	13.95 to 14.20
Southern Ohio malleable Bessemer	14.20
Basic, Northern	14.45 to 14.95
Lake Superior charcoal	15.25 to 17.25
Standard Southern carwheel	27.25 to 27.75

(By Mail)

Coke.—There is no new business in either furnace or foundry coke. Shipments are moving slowly on old contracts, but there have been comparatively few urgent requests to delay them lately. The consumption of foundry coke is far below normal, with the exception of the stove makers, who are taking the usual quantity. Coke for domestic use is also quiet, although this is the season when contracting should be heavy. Prices are unchanged, with 48-hr. Connellsburg furnace brands quoted around \$1.75 to \$1.90 per net ton at oven. Wise County and Pocahontas operators are asking from \$2 to \$2.25, the latter being quoted on a few special brands. Foundry coke is unchanged in all three districts at \$2.25 to \$2.50.

Finished Material.—Specifications for steel bars and small structural shapes are being sent in at a rapid rate. These cover contracts made at figures somewhat below present quotations, indicating that jobbers and consumers wish to accumulate stocks. This action is almost directly contrary to the situation four weeks ago. Sheets continue in good demand, and prices are firm at 2c., Pittsburgh, basis, for No. 28 black and 3c. for galvanized. These quotations would make the prices 2.15c. and 3.15c., respectively, f.o.b. Cincinnati and Newport, Ky. The unstable condition of the pig tin market makes it rather hard to quote on tin plate, and all orders are submitted to makers before acceptance. Warehouse prices on steel bars and structural shapes are from 1.80c. to 1.85c. Not much retail business is being done.

Old Material.—The market is stagnant. There is a very limited demand from any source, and it is reported that the railroads have been accumulating stocks that may be offered for sale at an early date. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

<i>Per Gross Ton</i>	
Bundled sheet scrap	\$6.75 to \$7.25
Old iron rails	11.75 to 12.25
Relaying rails, 50 lb. and up	19.75 to 20.25
Rerolling steel rails	10.75 to 11.25
Melting steel rails	9.25 to 9.75
Old carwheels	10.25 to 10.75

<i>Per Net Ton</i>	
No. 1 railroad wrought	\$8.75 to \$9.25
Cast borings	4.50 to 5.00
Steel turnings	4.50 to 5.25
Railroad cast scrap	9.25 to 9.75
No. 1 machinery cast scrap	10.25 to 11.25
Burnt scrap	6.00 to 6.75
Old iron axles	15.50 to 16.00
Locomotive tires (smooth inside)	9.75 to 10.25
Pipes and flues	6.25 to 6.75
Malleable and steel scrap	7.25 to 7.75
Railroad tank and sheet scrap	5.25 to 5.75

Hilb & Bauer, dealers in rails, metals and old material, have removed their general office in Cincinnati from 233 Mill street to 611-615 Union Trust Building.

Birmingham

BIRMINGHAM, ALA., August 24, 1914.

Pig Iron.—With large sales made by one or two producers at \$10 and one interest selling at that figure retiring from the manufacture of foundry iron altogether for the time being, those makers who have held straight along at \$10.25 and insist that they have not sold under that figure are inclined to believe that this will be the minimum hereafter. The asking price is still all the way from \$10 to \$10.50. Only one maker admitting the former and one holding to the latter and making small sales at that figure to customers preferring its iron. This latter interest is so well sold up for the remainder of the year that it can afford to wait for a rise. One company sold about 60,000 tons this month, a large portion going to the leading pipe manufacturer, and is credited with sales of approximately 125,000 tons since June 1 on a four-furnace production. Another has sold 75,000 tons in the same period on a three-furnace output, now increased to four. The estimate of total business booked since June 1 in this district is 400,000 tons. The disposition to curtail output does not appear to exist except with the interest making both basic and foundry, which is now on basic alone. The feature of the week was the blowing in of a stack at Bessemer by the Tennessee Coal, Iron & Railroad Company for the manufacture of ferromanganese out of ores arriving some time ago from Cuba, several train loads having been received at the Bessemer plant. Southern foundry consumption has increased to some extent, especially at the larger pipe works. Altogether the Southern iron situation appears somewhat stronger although no one will predict that more \$10 iron will not be sold. A wide range of territory in sales is still a feature. We quote, per gross ton, f. o. b. Birmingham furnaces as follows:

No. 1 foundry and soft.....	\$10.50 to \$11.00
No. 2 foundry and soft.....	10.00 to 10.50
No. 3 foundry.....	9.50 to 10.00
No. 4 foundry.....	9.25 to 9.75
Gray forge.....	9.00 to 9.50
Basic.....	10.00 to 10.25
Charcoal.....	23.50 to 24.00

Cast-Iron Pipe.—The water and gas pipe works are operating on a larger scale than for several months, but, it is claimed, not up to the normal for the season. Orders for larger sizes of pipe are reported as coming in greater quantities than for small sizes. Shipments are brisk. Pipe men are acutely interested in the announcement of the early inauguration of steamship lines from New York to San Francisco through the Panama Canal, with the prospect of plenty of ships and a through rate on pipe of \$7 per ton as compared with no ships out of Gulf ports and a rate from Birmingham to San Francisco of \$13 and no prospect of a reduction either by rail or water and rail. Some action will, however, be probably taken, otherwise the railroads of the South will lose a business heretofore practically exclusive to them. We quote, per net ton, f.o.b. manufacturers' yards, as follows: 4-in., \$20.50; 6-in. and upward, \$18.50, with \$1 added for gas pipe.

Old Material.—Steel grades are in greater demand, following renewal of activity at steel mills, but otherwise the market is without feature. Stocks are taken on carefully. We quote, per gross ton, f. o. b. dealers' yards, as follows:

Old iron axles.....	\$14.50 to \$15.00
Old steel axles.....	14.50 to 15.00
Old iron rails.....	13.00 to 13.50
No. 1 railroad wrought.....	10.00 to 11.00
No. 2 railroad wrought.....	8.50 to 9.00
No. 1 country wrought.....	9.00 to 10.00
No. 2 country wrought.....	8.00 to 9.00
No. 1 machinery cast.....	9.50 to 10.00
No. 1 steel scrap.....	8.00 to 8.50
Tram carwheels.....	9.50 to 10.00
Standard carwheels.....	10.50 to 11.00
Stove plate.....	8.00 to 8.50

Coal and Coke.—The bunker coal business, which had become an important factor in the Alabama trade, has been cut off, there being few vessel movements out of Mobile, New Orleans or Pensacola. The domestic mines are fairly busy filling the yards although stocks are being taken on with more circumspection. No results have yet followed efforts to enter the South American coal trade. Coke is somewhat weaker, although the

asking prices have not been changed and it is denied that there has been any shading. There is some Western business. The smallness of the output has saved prices. We quote, per net ton, f. o. b. oven, as follows: Furnace coke, \$2.75 to \$3; foundry, \$3.50 to \$3.65.

St. Louis

ST. LOUIS, Mo., August 24, 1914.

A steadily improving sentiment is to be noted in all divisions of the iron and steel market, which is slowly being translated into increased activity. Aggregate business is not yet markedly heavy, but the characteristics of the transactions are encouraging.

Pig Iron.—The week's business has been in small lots, the largest sale recorded being 225 tons of No. 2 Southern for third quarter sold at \$10.25, Birmingham basis. Most furnace representatives are declining to commit themselves beyond the third quarter without first consulting the furnaces.

Coke.—Coke is quiet with the inquiry for 6000 tons recently reported still unplaced owing to uncertainty of conditions. Small lots of furnace coke are moving at prices above the regular oven quotations and the same is true of 72-hr. coke. By-product coke is quotable at \$5.10 to \$5.20, delivered St. Louis.

Finished Iron and Steel.—There is some increase in transactions, though individually of small size. The advance to 1.20c. Pittsburgh is well established and there are no reports of a disposition to cut below this. Fabricators while busy are running on the hand to mouth basis.

Old Material.—The scrap market continues nominal as to prices, there being no transactions of moment. Some trading is going on among the dealers, but not of much importance in the aggregate. There is also some buying to lay down in yards when attractive figures are possible. The only demand appearing from the consumers is for small lots of cast and likewise of rolling mill grades. We quote dealers' prices f.o.b. St. Louis as follows:

<i>Per Gross Ton</i>	
Old iron rails.....	\$11.00 to \$11.25
Old steel rails, rerolling.....	11.25 to 11.50
Old steel rails, less than 3 ft.....	10.50 to 10.75
Relaying rails, standard section, subject to inspection.....	21.00 to 22.00
Old carwheels.....	11.00 to 11.25
No. 1 railroad heavy melting steel scrap.....	10.50 to 10.75
Shoveling steel.....	8.00 to 8.50
Frogs, switches and guards cut apart.....	10.50 to 10.75
Bundled sheet scrap.....	5.00 to 5.25

<i>Per Net Ton</i>	
Iron angle bars.....	\$10.00 to \$10.50
Steel angles bars.....	9.25 to 9.50
Iron car axles.....	16.75 to 17.25
Steel car axles.....	11.75 to 12.25
Wrought arch bars and transoms.....	11.00 to 11.50
No. 1 railroad wrought.....	8.00 to 8.25
No. 2 railroad wrought.....	8.00 to 8.25
Railroad springs.....	9.25 to 9.50
Steel couplers and knuckles.....	9.25 to 9.50
Locomotive tires, 42 in. and over, smooth.....	8.75 to 9.25
No. 1 dealers' forge.....	7.75 to 8.00
Mixed borings.....	4.00 to 4.25
No. 1 busheling.....	7.25 to 7.50
No. 1 boilers, cut to sheets and rings.....	5.75 to 6.25
No. 1 cast scrap.....	9.50 to 10.00
Stove plate and light cast scrap.....	8.25 to 8.75
Railroad malleable.....	8.00 to 8.25
Agricultural malleable.....	7.50 to 8.00
Pipes and flues.....	5.75 to 6.25
Railroad sheet and tank scrap.....	5.75 to 6.00
Railroad grate bars.....	7.25 to 7.50
Machine shop turnings.....	5.00 to 5.25

Boston

BOSTON, MASS., Aug. 25, 1914.

Old Material.—While sentimentally a better feeling exists as to the position of all scrap, actual transactions justify only a few changes in prices. An advance of 25c. per ton has been made on heavy melting steel scrap, wrought-iron pipe and bundled cotton ties. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential

for freight of \$2.30 a ton is included. Mill prices are approximately 50c. per ton more than dealers' prices.

Heavy melting steel.....	\$8.50 to	\$8.75
Low phosphorus steel.....	13.75 to	14.75
Old steel axles.....	13.25 to	13.75
Old iron axles.....	21.25 to	21.75
Mixed shafting.....	12.00 to	12.25
No. 1 wrought and soft steel.....	9.00 to	9.25
Skeleton (bundled).....	5.50 to	5.75
Cotton ties (bundled).....	7.75 to	8.00
Wrought-iron pipe.....	6.25 to	6.50
No. 2 light.....	3.75 to	4.25
Wrought turnings.....	5.00 to	5.50
Cast borings.....	5.25 to	5.75
Machinery cast.....	11.25 to	11.50
Malleable.....	8.00 to	8.25
Stove plate.....	7.75 to	8.00
Grate bars.....	5.25 to	5.50
Cast-iron carwheels.....	11.00 to	11.25

New York

NEW YORK, August 26, 1914.

Pig Iron.—The Eastern market has shown very little activity. It is a question whether the recent inquiry for low phosphorus iron from Japan will result in business, as a purchase of hematite iron for the Japanese Government works has been put through in England since the first named inquiry was received here. Expected difficulties with shipments from England to Japan are not materializing. Small lot sales have been the rule locally, one transaction of fair size in Virginia iron being for 500 tons. The price was \$12.75 at furnace for No. 2 X foundry. Foundries in general are not melting any more iron and some of them are melting less. A tentative inquiry for several thousand tons of foundry iron has come up in this market, but it is apparently semi-speculative. Furnace companies are not caring to sell far ahead at present prices and some of their asking prices are above what consumers would pay. The difference of \$1 a ton on Buffalo quotations still exists. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, \$14.75 to \$15; No. 2 X, \$14.35 to \$14.60; No. 2 plain, \$14.20 to \$14.45. Southern iron is quoted at \$14.75 to \$15 for No. 1 and \$14.25 to \$14.50 for No. 2.

Cast-Iron Pipe.—While private buying continues at about the usual seasonable rate, municipal lettings in this vicinity are few and small. Foreign inquiries are now coming forward in considerable number, some from countries outside of South America, which is especially regarded as a promising market. One inquiry for a small quantity has been received from Bagdad, Asia, which indicates the extent to which the world's trade has been dislocated by the European war. Prices show no improvement, competition for all business being as keen as at any time. Quotations on carload lots of 6-in. are about \$20.50 to \$21 per net ton, tidewater.

Ferrcalloys.—Definite information as to future shipments of 80 per cent. ferromanganese is not obtainable from representatives of English producers in this market. One stated that an inquiry for a shipment of 1000 tons brought the response that possibly 200 tons could be shipped. It is the general opinion that the future supply from England depends entirely on the developments and duration of the war. Events may shape themselves so that the alloy can be released and shipped or it may turn out that it will be wiser to retain a large part of it in that country. It is suggested that every effort should be made by consumers in this country short of a supply to facilitate shipments, even at premium prices, as a safeguard against a decided shortage. Others expect that some shipments on old contracts will be partially resumed plus necessary charges for war risks, etc. In any event, the supply will be considerably short of normal for some time to come. Reports are heard of sales of spot lots at \$100 to \$125, seaboard, and one quotation for forward delivery at \$85. Word from England is that some makers of ferromanganese are shipping from furnaces to docks and names of vessels are given in which it is expected these shipments will come forward in the near future, though sailing dates have not yet been indicated. Bolckow, Vaughan & Co. and the Wigan Coal & Iron Company have notified their American representatives, Rogers, Brown & Co., that they will make

shipments under existing contracts as fast as they are able; the only condition imposed is that the buyer pay the war risk insurance, which in original cables was put at 10 shillings but which is now likely to be less. As to arrears on contract deliveries, these makers advise that under the conditions no promises can be given, this being a matter for late adjustment. Under the extraordinary conditions obtaining, the makers' attitude as above indicated is considered by consumers to be very fair. The lower grade of domestic spiegeleisen is quoted at \$32 to \$35, f.o.b., but the market is reported quiet, the higher grade being sold. Quotations for 50 per cent. ferrosilicon remain unchanged at \$71 to \$73, Pittsburgh, according to the tonnage.

Finished Iron and Steel.—The Chesapeake & Ohio and the Baltimore & Ohio bridges, a bridge for the Pennsylvania at Kiskiminetas requiring about 4000 tons and a toll highway bridge at Troy for the Knickerbocker interests, 1500 tons, are among the biggest projects now before the structural trade, and some steel is yet to be placed for New York subway work, including 4000 to 5000 tons on which bids are to be taken September 15 for a section in William street. The lettings of the week include 400 tons for the New Haven pier, No. 37 East River, to the American Bridge Company, which has also about 400 tons for C. K. G. Billings at Locust Valley, L. I.; 300 tons for the New England Gas & Coke Company, to the New England Structural Company; 250 tons for a power building at Pawtucket, R. I., to the Providence Steel & Iron Company; 400 tons for the Max Ams Machine Company, Bridgeport, Conn., to the Eastern Steel & Structural Company, Worcester, Mass. For the Ford Motor Company's building, Long Island City, reported last week, the American Bridge is to fabricate 200 tons of riveted work and the Bethlehem Steel Company, 650 tons of Bethlehem columns. The non-committal attitude of the financial world is conspicuous in checking developments requiring steel, so that new business is duller than was the case last week, although specifications continue in fair volume. Prices for steel plates have stiffened and less is heard of prompt business in plates, even of fair volume, going for 1.15c., Pittsburgh. Similarly the lower prices prevailing for bar iron have been withdrawn, and one iron bar producer reports better business in August than in July, which month in turn was better than June. Activity in railroad car buying does not exist, and in some quarters it is held that there is practically nothing before the car builders. As yet, however, Eastern plate mills are running at a high percentage of capacity. We quote mill shipments of steel bars and shapes 1.20c., Pittsburgh, or 1.36c., New York, and steel plates at 1.31c. to 1.36c., New York. We quote iron bars at 1.25c. to 1.30c., New York. For lots from store we quote iron and steel bars at 1.80c. to 1.85c., New York, and plates and structural material at 1.85c. to 1.90c.

Old Material.—The situation looks a little better, inquiries now becoming slightly more plentiful from consumers who have long been disinclined to purchase more than such bargain lots as could occasionally be picked up. A few sales of heavy melting steel scrap have been made to buyers in eastern Pennsylvania at \$10.50 to \$11, delivered. Some sales have been made to consumers, but the best buyers have been dealers who still have contracts to be filled. As usual, on the appearance of a little better feeling, holders are stiffening in their views and old material cannot be had as freely at easy prices as a short time ago. Dealers' quotations are as follows, per gross ton, New York:

Old girder and T rails for melting.....	\$8.00 to \$8.50
Heavy melting steel scrap.....	8.00 to 8.50
Relying rails.....	20.50 to 21.00
Re-rolling rails.....	10.25 to 10.75
Iron car axles.....	17.25 to 17.75
Steel car axles.....	12.00 to 12.50
No. 1 railroad wrought.....	10.50 to 11.00
Wrought-iron track scrap.....	9.25 to 9.75
No. 1 yard wrought, long.....	8.50 to 9.00
No. 1 yard wrought, short.....	8.00 to 8.50
Light iron.....	3.25 to 3.50
Cast borings.....	6.00 to 6.25
Wrought turnings.....	5.50 to 5.75
Wrought pipe.....	7.75 to 8.25
Carwheels.....	9.50 to 10.00
No. 1 heavy cast, broken up.....	16.25 to 16.75
Stove plate.....	7.75 to 8.25
Locomotive grate bars.....	6.25 to 6.75
Malleable cast.....	7.50 to 8.00

British Markets Still Upset

Pig Iron Weaker—Steel Prices Fluctuate Widely —Manganese Ore Now Plentiful

(By Cable)

LONDON, ENGLAND, August 26, 1914.

The markets are irregular. Pig iron is weaker, and steel prices frequently show wide variations. A fair business is being done in semi-finished and finished steel. The leading tin-plate mills are booked to about half capacity. The United States Steel Corporation and independent American steel makers are quoting £5 (\$24.33) f.o.b. their works, for sheet bars. Japan is asking for galvanized telegraph wire but English makers are unable to quote, owing to the famine in spelter. No stocks of ferromanganese are apparent here, but plenty of manganese ore is now available because of the divergence to England of cargoes sold to Germany, and ore prices have declined sharply to about 8d. 3f. (17½c.) per unit. There seems to be no obstacle in the way of America buying Indian ores in bulk if raw material is wanted. It is hardly possible to quote ferromanganese, but the price for America is \$100 per ton, c.i.f., and some business has been done at this price. Scarcity of labor is now a factor of importance. Exports are permitted to France, Italy and America, but our government very properly commandeers whatever it wants. Stocks of pig iron in Connal's stores are 93,793 gross tons, against 87,465 tons two weeks ago, the increase being due to poor exports. The number of furnaces in blast is 147, against 201 at the same time last year. Such quotations as are available are as follows:

Tin plates, coke 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 13s. 6d. (\$3.22).

Cleveland pig iron warrants (Tuesday), 51s. 3½d. (\$12.49), against 52s. 11d. (\$12.88) last week.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 51s. 6d. (\$12.53), against 53s. 3d. (\$12.96) last week.

Steel black sheets, No. 28, export, f.o.b. Liverpool, 29 10s. (\$46.22).

Steel ship plates Scotch, delivered local yards, £6 15s. (\$32.84).

Steel rails, export, f.o.b. works port, £6 12s. 6d. (\$32.23).

Hematite pig iron, f.o.b. Tees, 70s. (\$17.03), against 72s. 6d. (\$17.64) last week.

Sheet bars (Welsh), £5 5s. to £5 10s. (\$25.55 to \$26.76), delivered at works in Swansea Valley.

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £6 17s. 6d. (\$33.45), against £5 10s. (\$26.76) July 30.

Metal Market

NEW YORK, August 26, 1914.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York	Lead		Spelter	
		Electrolytic	New York	New York	St. Louis
Aug. 19	12.75	12.25	48.00	3.87 1/2	3.70
20	12.75	12.25	44.00	3.87 1/2	3.70
21	12.75	12.25	40.50	3.87 1/2	3.72 1/2
22	12.75	12.25	40.00	3.87 1/2	3.72 1/2
23	13.00	12.37 1/2	39.00	3.87 1/2	3.72 1/2
24	13.00	12.37 1/2	39.00	3.87 1/2	3.72 1/2

Copper is a little stronger. Tin is lower and quieter. Lead is quiet and steady. Spelter is much higher. Antimony is unchanged but prices are nominal.

Copper.—The tone is better but business is dull. Moderate sales of electrolytic were made the latter part of last week which in comparison with recent business, were regarded as good. The bulk of the transactions were made at 12.50c., delivered, cash 30 days. For cash, New York delivery, the price was 12.35c. to 12.37 1/2c. Some talk is heard of electrolytic advancing to 13c., but so far no actual indication of this has been discovered. The sales referred to, as well as the continued curtailment in production, have contributed to the better tone.

A little prime Lake has been sold at 12.75c., but now none is to be had at less than 13c. The fact that exports are being made has helped in the better feeling. This has all been for English consumption. Europe is trying to buy and has succeeded, though such transactions are difficult to carry through. Exports have increased and the month's movement now stands at 15,404 tons, an increase of nearly 6000 tons since last week, which is considered good under the circumstances.

Tin.—A steadier tone has displaced the erratic conditions of last week and the market is dull in comparison. This dullness was especially prevalent the latter part of last week when prices fell to a level nearly 10c. under the highest for the week. There has been a little business in shipments from the East. In prompt delivery nothing is being done. Only one day of activity has been noticed since the last report. This was Monday when a fair quantity of tin was sold, mostly ex-steamer Minnehaha, which is due September 1, at 38.25c. to 38.50c. Spot tin is a drug on the market at 39c. and no business is being done. The fact that shipments are being made in excess of what was thought in any way possible two weeks ago is the cause of the falling off in business and the easier tone. The Minnehaha left August 22 and is due September 1 with 750 tons. While this is encouraging as to future shipments, it is small in comparison with the nominal receipts and the future of the market is uncertain. Consumers are conservative, but fair markets with some tightness in supplies are to be expected. Arrivals up to August 25 were 2330 tons, with 1620 tons reported afloat, an increase over last week of 700 tons. Quotations from London are still impossible. It is reported that steps are being taken to open the New York Metal Exchange.

Lead.—A fair activity has characterized this market but it has not been brisk. Some sales are reported at 3.70c. to 3.72 1/2c., St. Louis. This price undercuts that of the leading interest. There have been further sales for export, on which shipments are being made. In some quarters an advance in price is looked for, but in general the metal is not regarded as likely to go lower. The opinion is expressed that our own consumption will probably increase while production may decrease on account of the silver situation. We may also have to supply the lead that usually comes from German sources.

Spelter.—Advance has been the watchword since last week and the price is now 6c. and over, New York, some sales being made at 6.15c. Most of this is for export, and the market situation is due to the increased demand, though producers are not disposed to meet this and are bidding up the market. Domestic business is very quiet as a consequence.

Antimony.—The market remains unchanged since last week and prices on all grades are nominal. Cookson's is quoted at about 18c., Hallett's at 16c. and Chinese and Hungarian at 14c. Japan having entered the war, there is some talk of an embargo from that source, but nothing definite has developed.

Old Metals.—While the market is inactive, and most prices are nominal, everything into which spelter enters is higher. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	12.00 to 12.50
Copper, heavy and wire	11.50 to 12.00
Copper, light and bottoms	10.50 to 11.00
Brass, heavy	8.75 to 9.00
Brass, light	6.25 to 6.50
Heavy machine composition	11.75 to 12.00
Clean brass turnings	8.50 to 8.75
Composition turnings	10.00 to 10.25
Lead, heavy	3.60
Lead, tea	3.40
Zinc scrap	4.00

Chicago

AUGUST 24.—The metal market is less clearly defined this week than last. All quotations for sheet zinc have been withdrawn and prices are named for immediate shipment only on request. While no great change appears to have been made in the copper position, there is more uncertainty as to quotations. Tin is

still held at 40c., and antimony, while unchanged in price, appears to be somewhat easier. Spelter quotations continue to record steady advances. We quote as follows: Casting copper, 12.62½c. to 12.75c.; Lake copper, 13c. to 13.25c. for prompt shipment; small lots, ½c. to ¼c. higher; pig tin, carloads, 40c.; small lots, 40c.; lead, desilverized, 3.85c., and corroding, 4.10c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.80c. to 6c.; Cookson's antimony, 15c. to 20c for cask lots; other grades, 15c. to 20c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 11c.; copper bottoms, 9.75c.; copper clips, 10.25c.; red brass, 10.25c.; yellow brass, 7c.; lead pipe, 3.30c.; zinc, 3.50c.; pewter, No. 1, 23c.; tinfoil, 33c.; block tin pipe, 35c.

St. Louis

AUGUST 24.—The non-ferrous metals have quieted down somewhat, but prices as quoted are firmly held: Lead, 3.75c.; spelter, 5.75c.; tin, 42c.; electrolytic copper, 12.75c.; Lake copper, 12.85c.; Cookson's antimony, 14c. In the Joplin ore district there was a sharp advance in zinc blende and prices went up to \$49.50 per ton for 60 per cent., with very little selling lower than \$48. The choicest lots brought \$52 to \$52.50. These figures show a general increase of \$4.50 over the prices of the preceding week and \$10.50 over those of two weeks ago. Many of the producers are declining to sell. Calamine is steady at \$22 to \$23, with the choicest lots commanding \$28. Lead ore is firm at \$46. Miscellaneous scrap metals are quoted as follows: Lead, 3c.; zinc, 3c.; tea lead, 3c.; pewter, 22c.; tinfoil, 35c.; light brass, 5.50c.; heavy yellow brass, 7.50c.; heavy red brass and light copper, 9c.; heavy copper and copper wire, 10c.

Iron and Industrial Stocks

NEW YORK, August 26, 1914.

Another week has passed with most of the country's stock exchanges closed. As yet no time has been fixed for the opening of the New York Stock Exchange, which will probably not take place until after the opening of the London Exchange. Transactions are being conducted privately by brokerage houses, subject to the regulations adopted by a committee of the New York Exchange, but no quotations are being made public.

Dividends Declared

The New York Air Brake Company, regular quarterly, 1½ per cent., payable September 25.

The directors of the Pittsburgh Steel Company have decided to defer the declaration of the dividend on preferred stock usually payable September 1. The official announcement says: "This is done to conserve the company's cash resources and to protect its credits. The action is taken notwithstanding the fact that the dividend has been more than earned in the last three months." The rate of dividend has been 1¾ per cent. quarterly. The company had also been paying 2 per cent. quarterly on its common stock.

On Saturday, August 22, No. 3 blast furnace of the Cambria Steel Company, Johnstown, Pa., was put in blast after being completely rebuilt and relined. Record time was made in rebuilding this furnace. The company is now operating six of its blast furnaces with two out. It is also operating 28 open-hearth furnaces on practically full time.

The C & C Electric & Mfg. Company, Garwood, N. J., manufacturer of electric motors, generators and electric arc-welding equipment, announces the removal of its Detroit office from 144 Seyburn avenue to 1111 Chamber of Commerce Building. This office is in charge of R. K. Slaymaker.

The Punxsutawney Iron Company, Punxsutawney, Pa., will blow in its blast furnace this week, after an idleness of eight months. During this time a number of improvements have been made in the plant.

PERSONAL

A. F. Huston, president Lukens Iron & Steel Company, Coatesville, Pa., returned from abroad August 21. He was in Paris during the early days of the European war.

John A. Rawlins, a member of the firm of Naylor & Co., and vice-president of the American Grondal Company, 45 Wall street, New York, was seriously injured by a fall from his horse in a polo game August 22, and is lying dangerously ill at the Nassau Hospital in Mineola, Long Island.

Allen V. Moyer, formerly with the Heine Safety Boiler Company, Phoenixville, Pa., has resigned to accept a position as mechanical engineer with the George T. Ladd Company, Farmers' Bank Building, Pittsburgh.

Eli Joseph, president Joseph Joseph & Bros. Company, Woolworth Building, New York, who has been sojourning in Europe, has sailed for home and is expected to arrive September 1.

Edward J. Henesey and Martin F. Mann, formerly with the H. C. Harrower Company and later secretary and shop superintendent of the Farrar Iron & Steel Company, respectively, having disposed of their holdings in the latter company, will shortly incorporate a company for the fabrication and erection of structural steel for buildings.

A. J. Gardiner, for many years with the Landis Tool Company, Waynesboro, Pa., has severed that connection to accept a position with the Modern Tool Company, Erie, Pa., and will cover the same territory as when with the Landis Company. The Modern Tool Company has just brought out a full line of self-contained single pulley drive grinding machines.

Luciano Selmi has accepted the position of chief chemist and metallurgist for the Otis Steel Company, Cleveland. For seven years Mr. Selmi had charge of the laboratory of the Lake Superior Iron & Chemical Company, Ashland, Wis., and since June, when he severed his connection with that company, he has been engaged on special chemical engineering work for the Zenith Furnace Company, Duluth, Minn.

P. R. Conlin, who has been superintendent of Dover furnace of M. A. Hanna & Co., at Canal Dover, Ohio, has been appointed general superintendent of the United Iron & Steel Company, Cleveland, operating the Cherry Valley furnace at Leetonia, Ohio, and Fannie furnace at West Middlesex, Pa. Mr. Conlin succeeds B. J. Mullen, who recently resigned.

E. St. Elmo Lewis on September 1 will become vice-president and general manager of the Art Metal Construction Company, whose factory headquarters are at Jamestown, N. Y. Mr. Lewis has been for the past 10 years advertising manager of the Burroughs Adding Machine Company, Detroit, Mich. During that time he has been prominently identified with the creation of new markets and the development of old markets for that organization. The Art Metal Construction Company is the oldest and largest institution making metal office furniture, filing and index equipment, and metal equipment for banks, libraries, public buildings, etc.

Thomas D. West, West Steel Casting Company, Cleveland, presented resolutions which were adopted at a largely attended public meeting in Cleveland August 9, protesting against wars and favoring the settlement of international disputes by arbitration. Mr. West is organizing the work of circulating peace petitions which are to be signed and forwarded to President Wilson.

D. M. Parry, formerly president of the National Association of Manufacturers, was stricken with illness on the Pacific Ocean, returning from a tour of investigation of world trade, on behalf of the association, and was in a serious condition when taken from the steamer at San Francisco August 22.

J. C. McQuiston, manager of the Westinghouse Department of Publicity, East Pittsburgh, has returned from an extended automobile trip through the Central Western States.

Important New Railroad Line Finished

On Wednesday, August 19, at Nova, Ohio, the last spike was driven, completing the building of the Lorain, Ashland & Southern Railroad. This road is expected to be of considerable value to Pittsburgh iron and steel manufacturers as it gives them better shipping facilities to a large number of points in Ohio that formerly were reached by a round-about way by other railroads. This new road, which crosses and links east and west roads in northern Ohio, begins with a belt line at Lorain and runs south about 70 miles to Custaloga on the Pittsburgh, Fort Wayne & Chicago division of the Pennsylvania Lines West. The belt line which encircles the steel mills and factory districts of Lorain is about 8 miles long, and the road complete is about 78 miles. Most of the road has been under construction for the past year and a half. The stretch between Ashland and Custaloga was built about 15 years ago. During the past few months track-laying teams have been working south from Wellington and north from Ashland, and it was these two teams that met on Wednesday at Nova. In the presence of a number of officers, the last spike was driven and the last fish plate bolted in place.

On account of the railroad connections of this line, and the manufacturing and farming districts through which it passes, it is expected to become one of the most profitable small lines in the country. Going south from Lorain, the road crosses one branch of the Lake Shore just outside of Lorain and another branch at Oberlin; the Wheeling & Lake Erie and the Big Four at Wellington; the Northern Ohio at Baker; the Baltimore & Ohio at Nova; the Erie at Ashland, and it touches the Pennsylvania Lines at Custaloga. While one train was sent over the road on the day it was completed, and others will be dispatched from day to day, the line will not be ready for scheduled freight and passenger business until September 1. Steam locomotives will haul the freight trains, while passenger traffic will be handled by single storage battery cars of the Edison-Beach type.

J. H. Sessions & Son, Bristol, Conn., have appointed Surpless, Dunn & Co., 74-76 Murray street, New York, and 34 North Clinton street, Chicago, direct sales representatives for their line of light steel washers, standard washers and felloe plates. The light washers made by this firm are particularly well known in the carriage hardware trade, but are also used for many other purposes. Inquiries or orders may be sent either to the New York or Chicago offices of Surpless, Dunn & Co., or to the factory directly.

July was another unfavorable month in our foreign trade. The Department of Commerce reports imports of merchandise in that month aggregating \$160,178,123 and exports of \$154,082,235. The balance of trade against us was therefore \$6,095,888. The exports of gold in July are put at \$23,669,424, against \$8,653,969 in July, 1913. The total exports of gold for the seven months ended with July, 1914, are placed at \$117,643,559, against \$72,338,585 in the corresponding period of last year.

The Earle Gear & Machine Company, Philadelphia, announces that its subsidiary company, the Lea Equipment Company, has been dissolved, and will not be operated any longer as a separate organization. The stockholders and officers of both companies have been the same for a number of years. All business formerly transacted by the Lea Equipment Company will be handled in the future by the same factory and sales organizations as in the past.

The C & C Electric & Mfg. Company, Garwood, N. J., has opened a branch sales office in the Security Building, Minneapolis, Minn. The office will be in charge of R. L. Wells and will handle the increasing business of the company in electric motors, generators and electric arc welding equipment in the Northwest.

OBITUARY

HENRY K. ROWELL, Boston, died suddenly August 9 from heart failure, aged 44 years. He was born in Charlestown, Mass. At the time of his death he was in charge of the department of machinery and mill organization in the office of Charles T. Main, mill engineer and architect, Boston. Mr. Rowell's experience in mill work was extensive, he having been engaged in practical organization work in textile mills for some years. After this he spent some time with Edward A. Buss, consulting engineer, Boston, three or four years with Lockwood, Greene & Co., engineers, Boston, and for the last eight years has been associated with Mr. Main. He was a member of the American Society of Mechanical Engineers and the Boston Engineers' Club.

WILLIAM W. ECCLES, treasurer of the Richard Eccles Company, Auburn, N. Y., died August 16 at his summer home on Owasco Lake after a long illness. He had been connected with the company, which manufactures vehicle forgings, for about 20 years, having charge of the manufacturing department of the plant. He was a son of Richard Eccles, founder of the company. He received his earlier education in the public schools of Auburn and finished his studies at Yale. Later he became associated with his father and after a short time was admitted as a member of the firm. He leaves a widow, a daughter and two sons.

J. KENNARD MENDENHALL, superintendent of the sheet mill of the Reading Iron Company, Reading, Pa., for the past 12 years, died August 16, aged 62 years, from blood poisoning caused by a carbuncle. He was born in Philadelphia and his father was a steel manufacturer. After teaching school for several years, Mr. Mendenhall entered the employ of an iron company, then gained experience with other iron and steel establishments, and 25 years ago became connected with the Reading Iron Company. He leaves a widow and two daughters.

JOHN DAKER, local representative of the Firth-Sterling Steel Company, died in Detroit, Mich., August 15, aged 70 years. He was a native of Scotland, came to America in 1858, served in the civil war, was ordained a Methodist minister in 1876 at Pittsburgh, and subsequently engaged in the steel business. He leaves a widow and eight children.

CHARLES A. RICKS, secretary and assistant treasurer of the G. C. Kuhlman Car Company, Cleveland, Ohio, died suddenly of heart disease August 24, aged 45 years.

THEODORE G. MEIER, treasurer of the Heine Safety Boiler Company, St. Louis, died August 18, aged 78 years. He leaves a widow but no children.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, has received an order from the New York Municipal Railway Corporation for the control equipment for 100 new steel cars to be used in the new subway in New York City. It is the second order from this corporation, the first set of equipment being now in use. The company has also received an order for 25 sets of control equipments for use on the new low-floor cars being operated by the Third Avenue Railway Company, New York City.

The third annual first-aid meeting of the mine and mill teams of the Cambria Steel Company will be held at Johnstown, Pa., September 5. Twelve judges will hand down decisions in the contests that have been under way by these teams for some time.

The third cargo of iron ore from the Bethlehem Steel Company's Tofo mines in Chile arrived at Philadelphia last week, the British steamer Ascot bringing 6300 tons.

Some Increase in Inquiry Due to the War

Additional Plant for Ball Bearings— Machine Tool Orders in New England— Pittsburgh Activity Will Be Stimulated

New England Machine Tool Manufacturers Look for Foreign Trade

Our New England editor gives the results of recent inquiries among machine tool builders in the following:

"Significance may be attached to the opinions given in 22 replies from New England machine-tool builders to letters mailed them August 20. Nineteen of them express strong confidence in the beneficial results which the war will have on manufacturing business in the United States. The other three firms expressed no adverse opinion; they were simply in doubt and preferred to wait until affairs have shaped themselves more clearly before going on record. Most of the writers of these letters express themselves forcibly, indicating that they have no doubt whatever of the ultimate benefits which should accrue to America because of the frightful conflict engulfing most of Europe and apparently destined to extend itself into every corner of the earth where the warring nations hold territory.

"Cable orders for machinery continue to be received from England. Among them is one for a moderate sized lot of engine lathes and shapers to be furnished by the Hendey Machine Company, Torrington, Conn.

"The cutting off of the supply of foreign-made ball and roller bearings is already being felt by machine-tool builders, especially in the inquiries received for internal and external grinding machinery and for automatic machines for handling bar stock. Manufacturers of other classes of machinery are receiving inquiries from American users which are traceable directly to the war. The volume of business represented by these orders and inquiries is not large, but it is increasing and doubtless will increase more rapidly as time goes on.

"The manufacturers of some lines of hardware are beginning to feel the effects of the shutting off of imports from Europe. Makers of products such as cutlery should be greatly benefited, for competition, especially from Germany and England, has been very keen."

Canadian Steel Works Closed Down or on Short Time

Immediate effects of the war on the steel industries of Canada have been unfavorable. The Dominion Iron & Steel Company's steel works at Sydney, Nova Scotia, have been closed down, largely, it is reported, because of cancellation of a Canadian Northern Railroad rail order, which in turn was due to the difficulties of financing in England. The company has a large tonnage of rails and other manufactured product on hand, valued at more than \$2,000,000, including 20,000 tons of rails on foreign orders. It has the promise of an order for 10,000 tons of steel for delivery in the fall. The Nova Scotia Steel & Coal Company has shut down its furnaces and mills in part.

J. Frater Taylor, president of the Lake Superior Corporation, Sault Ste. Marie, Ont., has announced that the steel plant will run half time beginning September 1. Mr. Taylor has given orders that all the supplies for the works at Sault Ste. Marie are to be bought in Canada, even in cases where more money has to be paid. He says that everything possible will be done to mitigate the effect of partial closing down of the works, and adds: "Why should not Canadian manufacturers stand together and make up their minds firmly to pur-

chase as little as possible outside of Canada? The imports from the United States are enormous. For patriotic reasons, even at a little sacrifice in cost, it will pay Canadian manufacturers to buy in Canada."

The Nova Scotia Steel & Coal Company has closed down its Wabana iron mines on Bell Island, Newfoundland. The company made heavy sales for export to Germany and some to England, deliveries against which have been held up. No sales of Wabana ore for shipment to this country were made this year, but some deliveries to eastern Pennsylvania furnaces have been made against deferred shipments on last year's contracts. One cargo, due to arrive early in September at Philadelphia, will complete this season's shipments. The various vessels under charter by the company have been rechartered and will engage in the coal trade between the United States and South American and Mediterranean ports.

The Dominion Iron & Steel Company's iron mining operations on Bell Island have also been suspended.

The Massey-Harris Company, Toronto, the well-known manufacturer of implements, which exports a considerable part of its product, has closed down its works for stock taking and no time has been fixed for resumption.

Pittsburgh Inquiry from California and Abroad—The Magnesite Supply

PITTSBURGH, August 25, 1914.—Pittsburgh iron and steel manufacturers, also builders of machinery, and dealers who handle iron and wood-working machinery made in other cities, report considerable inquiry from abroad for their products, notably from Australia, England and Canada. Pacific coast inquiry is also large. It is estimated that 75 per cent. of all the structural steel used on the Pacific coast in 1912 was imported, most of it from Belgium. While figures for 1913 are not available, it is said that even a larger percentage of structural steel used on the coast was imported. American manufacturers believe that the greater part, if not all, of this Pacific coast trade will again come to American mills, and the Cambria Steel Company, Jones & Laughlin Steel Company and the Carnegie Steel Company all report fairly large inquiries for steel bars, plates and shapes from that district.

American rail mills are in receipt of an inquiry for 31,000 tons of steel rails for shipment to Australia. Were it not for the European war it is doubtful if this inquiry would have come to the country.

THE SUPPLY OF MAGNESITE FOR FURNACE BOTTOMS

In connection with the question whether a supply of ferromanganese can be had equal to the demands of the steel mills in this country is that of the supply of magnesite, used very largely in making open hearth furnace bottoms. When American steel mills are running to normal capacity, the consumption of magnesite per month is about 12,000 tons. One leading dealer in the Pittsburgh district, that for some years has taken the output of a large mine in Greece, had on hand at Chester, Pa., when the war broke out, about 25,000 tons. Other concerns that import magnesite are estimated to have had 12,000 to 13,000 tons, so that the visible supply was 37,000 to 38,000 tons, or sufficient for at least three months' ordinary operations. As none of the steel mills is running full, the chances are that the magnesite

supply in early August was sufficient to last for four to five months. A good many steel concerns also use dolomite in making bottoms, and lately have largely increased their consumption of dolomite, conserving their magnesite as much as possible. It would seem, therefore, that there is no serious fear that a shortage in magnesite will be felt for three or four months at least. Dolomite deposits are abundant and should the war be prolonged it may become necessary to use dolomite exclusively. This, however, is a condition that is hardly likely to come about.

THE SUPPLY OF TOOL STEEL

As is well known, machine tool makers and other domestic consumers have been heavy customers of foreign mills manufacturing high grade tool steels. Importations of some of these steels is now impossible, but there are considerable stocks in this country. In any event American makers can fully take care of domestic needs. The Braeburn Steel Company, Pittsburgh, whose works are at Braeburn, Pa., in a recent letter to the trade said:

Owing to the fact that some of our customers fear an immediate and great increase in the price of tool steel, we hasten to state our position on this question. The war in Europe will undoubtedly cause a scarcity and consequent rise in the price of some of our raw materials. We see, however, no excuse or necessity for an immediate increase in the price of finished tool steel. The American mills can readily make all the tool steel used in this country. We will continue to care for our trade at our usual prices for some time to come, and will make no future advance in price until such advance is absolutely necessary. Should an advance become necessary, it will be only so great as will cover the increased cost of our raw materials.

Foreign Inquiries and Increased Operations

A large firm of British merchants desires to represent companies in the United States manufacturing blooms and billets, sheet bars, pig iron, plates, sheets, malleable fittings, valves, cast iron pipe, sanitary goods and enameled and glazed tiles. The address of the British firm for the purposes of this inquiry is Box P 1, care of *The Iron Age*.

F. M. Frye & Co., 46 Upper Thames street, London, E. C., are arranging to import American machine tools, and desire addresses of companies in the United States which manufacture them.

The following from the London Ironmonger of August 8 indicates various lines in which Great Britain may be a buyer from the United States in view of the cutting off of continental supplies:

"Among the hardware commodities for which this country is chiefly dependent upon the Continent are: Enamelled ware, wire nails, glass, glassware and fittings for lamps, and metallic filament lamps (for the wire and bulbs).

"Articles for which we are largely, although not perhaps chiefly, dependent upon the same source of supply include: Wire and wire-netting, tubes, semi-manufactured goods for the production of iron and steel and tubes, bar iron, rods, angles and sections, sewing machines, spelter and sheet zinc.

"Another category—that of articles which are largely purchased from the Continent—embraces: Hacksaws, heating apparatus, anthracite stoves, domestic hardware, malleable fittings, sheet metals, bolts and nuts and electrical apparatus. Finally, there is the class of hardware specialties which are supplied by the Continent to some extent, but could easily be replaced from British sources. Among these are: Small tools, cutlery (including scissors), fancy goods, aluminum wares and oil cooking and heating apparatus of the Primus and Barthel types."

The Welsbach Company, Gloucester, N. J., employing 1200 men, has been working half time. The above force has now been put on full time and 300 additional men will be employed. The competitors of the company are chiefly in Germany and under present conditions there will be a largely increased demand for the domestic product. No advance in prices is contemplated.

A New York State company manufacturing optical instruments has received much increased inquiry for its products due to the cutting off of German exports. Some large orders have been received for lenses for lanterns and other uses.

Will Our Iron and Steel Trade with Canada Be Increased by the War?

The possibility of increasing our iron and steel trade with Canada as a result of the war depends to a considerable degree on the rate of Canadian recovery from untoward financial conditions due in part to inflated real estate values. Naturally with so large an investment of British capital across the border the war's disturbance of British finance will be an added factor. Already some inquiry is being made as to the prospects for larger shipments from this side.

In an article in *The Iron Age* for February 5, 1914, entitled "Canada's Large Imports of Iron and Steel," by Edward Porritt, the subject was treated largely with reference to Great Britain and the United States. The war has placed a different phase on the situation, and data relative to Germany are now added to what was contained in the article referred to and all are here presented. The following table compares the iron and steel and machinery shipments from the three countries to Canada for the fiscal year ending March 31, 1913, these being the latest official figures as compiled by the Canadian Department of Trade and Commerce:

Imports of Iron and Steel Into Canada from the United States, Great Britain and Germany for the Fiscal Year Ending March 31, 1913

	United States	Great Britain	Germany
Agricultural implements	\$4,383,394	\$79,893	
Angles, beams, etc.	7,777,910	379,930	\$47,027
Axes	713,848	33,139	27,628
Bars, bands and hoops	1,223,864	728,185	1,532
Bar iron and steel	3,401,538	...	...
Billets	1,716,530	...	...
Bridge material	822,947	487,650	...
Castings	1,673,758	100,051	...
Cast scrap iron	572,179	...	...
Chains	560,409	109,072	...
Chrome steel	28,566	...	...
Cutlery	301,600	778,524	400,107
Gasoline engines	3,162,446	83,612	...
Locomotives	783,987	2,324	...
Forgings and shaftings	325,673	13,222	...
Builders' hardware	832,357	112,983	...
Hoops and bands	944,548	28,389	2,057
Ingots, blooms and slabs	41,758	57,131	...
Locks	641,550	...	...
Typewriters	1,144,033	3,055	...
Nails and spikes	164,515	3,055	...
Iron ore	3,191,643	...	...
Pig iron	3,226,457	828,098	...
Cast-iron pipe	265,215	768,211	...
Pipe fittings	1,237,517	...	...
Plates	3,560,827	34,212	22,532
Rails	3,831,200	16,565	...
Fish plates	87,369	599	...
Railroad spikes	240,684	570	...
Switches	284,063	33,240	...
Railroad tie plates	21,937	...	...
Galvanized sheets	1,537,464	1,716,963	...
Tin and terne plates	582,531	326,332	...
Sheets and strips	3,052,224	344,345	...
Ship material	79,863	...	...
Stoves	1,037,016	...	9,662
Tools and implements	1,424,110	152,095	60,902
Tubes	3,490,034	550,702	340,432
Wire rods	2,132,014	10,074	...
Wire and manufactures of wire	3,796,000	2,393,342	74,535
Scrap	...	11,154	...
Steel for saws	...	45,860	...
Steel ball bearings	...	...	7,652
Skates, all kinds	...	...	24,975
Tires, locomotive and car-wheel	...	...	326,086
Agate ware	...	...	82,410
Total machinery	35,929,229	2,918,028	281,802
Total iron and steel, (Duty 106,843,258)	10,385,651	1,404,375	
Total iron and steel, (Free 14,096,857)	4,271,473	719,589	
Total Canadian imports	455,322,555	139,653,587	14,473,833
Total Canadian exports	167,110,382	177,982,002	3,402,394

The last two items in the table give respectively the total value of all Canadian imports from the countries named and the value of all Canadian exports to each. As is well known, Canada's imports, in spite of preferential duties on British products, are very largely from the United States, this country sending to Canada iron and steel products more than ten times as much as Great Britain. The total of Germany's exports to Canada in iron and steel and machinery amounted to only \$2,123,964 in 1913, or about one-seventh of Great Britain's. The extent to which the United States may benefit by decreased shipments from the other side is therefore largely dependent, apart from financial con-

siderations, on Great Britain's ability to continue manufacture and shipments. Exports of iron and steel from France to Canada had a value of only \$82,033 for the period under discussion.

It is interesting to note that of the total exports of iron and steel from this country to Canada in the year only \$14,096,857 worth entered free of duty, while the dutiable imports were seven and a half times as much

Additional Plant for Ball Bearings

Announcement has been made in Philadelphia in the past week that the Hess-Bright Mfg. Company will add to its plant at Front street and Erie avenue in that city in view of the necessity put upon it by the war of manufacturing in this country ball bearings which have been manufactured heretofore in Germany. It is stated that plans have been made for the necessary additions and work will begin at once. We are advised by the company that the published statements are substantially correct except as to the number of employees that will be required. This was given in the daily press as 4000. Naturally it would be difficult within a short time to train any such number of men, though more than that number have been employed in the German works, of whose output the Hess-Bright Company took 60 per cent. Automatic machinery will be employed to the largest extent possible, the higher wage scale in this country furnishing a greater incentive to the use of such machinery than exists in Germany.

Cincinnati and Columbus Move for Export Trade

CINCINNATI, Ohio, August 22, 1914.—The majority of local machinery manufacturers are of the opinion that Japan will furnish the quickest market for exporters, but they are not overlooking South America and Australia. At a recent meeting of the Cincinnati Export Club, a branch of the Chamber of Commerce, President F. B. Beinkamp appointed the following committee to investigate different foreign markets now open: W. B. Campbell, vice-president the Perkins-Campbell Company; J. W. Hargrave, president Cincinnati Tool Company; W. A. Biddle, export manager American Laundry Machine Company; J. B. Hawley, export manager Ault & Wiborg Company, Cincinnati; G. H. Charls, manager of sales American Rolling Mill Company, Middletown, Ohio. The committee has already begun work in gathering and compiling data, but early definite results cannot be expected on account of the length of time required for correspondence.

The Chamber of Commerce, Columbus, Ohio, has also launched a campaign for obtaining a share of South American trade. At a recent meeting John A. Kelley, manager of the Columbus Industrial Bureau; Carl Norton, Kilbourne & Jacobs Mfg. Company, and L. W. Seymour, general manager James Ohlan & Son Saw Mfg. Company, were named as a committee to investigate possibilities and frame a tentative plan of campaign for trade with Spanish-America.

The Emergency Vessel Measures Passed and Proposed at Washington

WASHINGTON, D. C., August 25, 1914.—The chief interest of the iron and steel industry in the Congressional emergency legislation necessitated by the European war centers in the various measures intended to extend our merchant marine. The proposed war revenue taxes will hardly touch any phase of this industry. The leaders in the House and Senate are exceedingly fearful of radical action that might open up general tariff legislation, and they will confine the proposed revenues to as limited a list of items as possible. The measure will be framed by the Ways and Means Committee of the House, and so far it has been careful not to discuss it in public any more than necessary. It is likely, however, that in the customs field there will be a special import duty on coffee and tea with a probable restoration of the sugar duty. The remainder of the deficit will be made up from internal revenue by an increase in liquor and beer taxes, with a

probable impost on proprietary medicine and a stamp tax on checks, documents and possibly telegrams. No action is to be taken, however, until President Wilson has sent a message to Congress specifying the exact needs of the situation.

The Bureau of Navigation is at work on the regulations under which foreign ships are to be admitted to American registry in compliance with the law passed by Congress this week. It has not been decided how far the President will avail himself of the power to permit such foreign ships to be manned by foreign officers and to be admitted to registry without survey by American officials. There is still considerable fear in administration circles that the belligerent nations will not respect the immunity from capture which the American flag should give to foreign ships thus transferred. Should such a vessel be seized there is danger of serious complications.

In the meantime, efforts are being made in Washington to secure a revision of the shipping laws which will make them more liberal than they are now, in the hope that foreign ships put on the American registry during the war will remain there after it is over. This program also includes opposition to the La Follette Seamen's bill, which, though greatly modified by the House Committee, would still keep shipowners at the mercy of the labor unions.

The administration has added two important items to its marine programme—first, in the shape of a Government bureau of war risk insurance, and second, by a proposal to buy \$30,000,000 worth of ships as a governmental project to aid in the carrying of American trade, temporarily paralyzed by war. The first of these promises little difficulty, but the second found vigorous opposition, and efforts were made to limit such a service to trade with neutral ports. To this President Wilson declined to agree. This brought up the danger that efforts to carry "conditionally contraband" freight, such as grain, to belligerent ports might lead us into peril. The proposal of the Government to buy ships also resulted at once in a considerable increase in the "bargain" prices of foreign ships in American ports.

The piling up of emergency legislation by the war seems definitely to put an end to the hope of an early adjournment of Congress. Representative Underwood, the Democratic leader of the House, has given it as his opinion that there will be no vacation for Congress until the Christmas holidays. The progress of trust legislation in the Senate has been anything but speedy, and the conferees on the trade commission bill, passed two weeks ago, have hardly begun the work. The Clayton omnibus anti-trust bill is on the high tide of debate, and the Senate Interstate Commerce Committee has not even filed its report on the Rayburn securities bill.

W. L. C.

Our Iron and Steel and Machinery Exports to Brazil

A study of the latest official statistics of the foreign trade of Brazil, rendered all the more important now under war conditions, emphasizes the general impression that the United States does not play an important part as compared with Germany and Great Britain. The latest available figures are those for the calendar year 1912. The total imports of all commodities into Brazil for the year 1912 were valued at \$308,243,736 an increase of \$51,079,608 over those for 1911. The following figures give the total imports for 1911 and 1912 and the relative values from the five principal countries:

	1911.	1912.
Total imports into Brazil.....	\$257,164,128	\$308,243,736
From Great Britain.....	72,695,592	77,615,548
From Germany.....	43,180,830	53,018,079
From France.....	22,744,839	27,751,094
From Belgium.....	10,725,701	16,582,529
From the United States.....	34,300,327	48,109,315

The total imports of iron and steel and manufactures thereof into Brazil were \$121,138,658 in 1912, as compared with \$96,549,760 in 1911. The imports for 1912 were divided as follows:

Iron and steel	\$61,253,719
Engines, machinery, tools, etc.	59,845,929
Total	<u>\$121,138,658</u>

The distribution of the important articles of these imports among the three leading countries, as well as the tonnage for 1912, is furnished in the following table:

Tonnage and Relative Approximate Proportion of Imports of Iron, Steel and Manufactures Thereof Into Brazil During 1912.

Article.	Metric tons	From Germany, per cent.	From United States, per cent.	From United Kingdom, per cent.
Wire	48,947	50	25	...
Galvanized roofing	25,962	...	15	Balance
Tipplate	15,011	...	19	Bulk
Structural material	51,462	46	6	46
Bridge material and fencing	20,120	...	22	26
Steel rails and plates	234,719	...	11	8
Piping and fittings	64,084	...	10	50
Railroad axles and wheels	14,095	...	20	...
Cutlery	206	48	15	28
Nails, screws, etc.	4,566	...	22	...
Enamelware	1,387	100	...	...
Electrical machinery and apparatus	11,202	29	40	...
Electric wire and cable	2,180	...	43	41
Locomotives	16,792	34	49	12
Traction and stationary engines	5,268	30	30	...
Industrial machinery	30,005	30	4	18
Agricultural machinery	4,492	42	58	...
Machinery and miscellaneous apparatus	34,738	22	35	23

The imports of steel bars and rods are given as 10,042 metric tons in 1912; of iron bars, rods and plates as 41,202 tons, and of ingots as 13,813 tons.

From the above it is seen that, while in most items the United States is a poor third, in a few it participates to a larger extent. In *The Iron Age* for August 20 the value of our exports of iron, steel and machinery to the four principal countries of South America was given.

Pittsburgh and Nearby Districts

The report that the Sharon Steel Hoop Company, Sharon, Pa., had definitely decided not to start work this year on its proposed new open-hearth steel plant and sheet-bar mills at Wheatland, Pa., is premature. The matter has not yet been decided. The company's plant at Sharon, consisting of open-hearth steel works, sheet-bar and hoop and band mills, is in operation to nearly full capacity. The band mill started up on Monday, August 17, after being down two weeks while the heating furnaces were being repaired. The company states that it has a fair amount of business on its books and regards the outlook as better.

The Junk Dealers' Protective Association of Pittsburgh has been organized by collectors of iron and steel scrap, rags, bottles, paper, etc. It will have representatives to act for members in legal disputes.

The Sharon works of the Carnegie Steel Company, having an open-hearth steel plant and skelp and light plate mills, started up on Monday, August 17, after being idle about six weeks.

J. G. Chalfant, Pittsburgh, engineer for Allegheny County, is preparing plans for a steel bridge from Helen street, McKees Rocks, to Preble and California avenues, North Side, to be built at a cost of \$2,000,000.

The Union Switch & Signal Company, Swissvale, Pittsburgh, has recently received some large contracts for signal and safety appliances as follows: Interlocking plant, Canadian Northern Railway, Estevan, Sask.; alternating current automatic block signal system, Indianapolis, Columbus & Southern Traction Company; four mechanical interlocking plants, Illinois Traction Company; automatic block signals on a 60-mile stretch of single track line, Maryland Railway Company; interlocking signal plant, Baltimore & Ohio Railroad Company, at the Calumet River drawbridge, consisting of 15 working levers, four space levers and seven spare spaces.

The blast furnace of the Pittsburgh Crucible Steel Company at Midland, Pa., which was blown out about three months ago for relining and repairs, is expected to be ready for blast about September 10. It will run on basic iron for the company's open-hearth plant.

Brown & Co., Inc., operating the Wayne Iron Works, Pittsburgh, have signed the amalgamated wage scale.

They formerly signed the puddling scale of the Sons of Vulcan, but that organization has been dissolved.

Herman Laub, engineer, Keystone Building, Pittsburgh, has received contract from the Parkersburg & Ohio River Bridge Company for a steel bridge over the Ohio River at Parkersburg, 2850 ft. in length, requiring about 3000 tons of steel, which will be rolled by the Carnegie Steel Company. The bridge will be of suspension type with structural steel approaches.

No. 1 blast furnace of the Shenango Furnace Company, Sharpsville, Pa., which has been idle for some months while being rebuilt and relined, was put in operation on Tuesday, August 18. The new furnace was built by the W. B. Pollock Company, Youngstown, Ohio, and is a duplicate of the four blast furnaces of the Youngstown Sheet & Tube Company. It will have a daily capacity of 450 to 500 tons. No. 3 furnace of the Shenango Furnace Company will be blown out in a few days for relining only.

The Valley Mold & Iron Company, Sharpsville, Pa., has plans for the construction of a large ingot mold foundry, to cost about \$200,000.

The Wheeling Steel & Iron Company, Wheeling, W. Va., which recently took over the Wheeling Sheet & Tin Plate Company, Yorkville, Ohio, with its 10 hot tin mills, is considering the advisability of adding 12 more hot tin mills, but a definite decision has not yet been reached.

The Orenstein-Arthur Koppel Company, Pittsburgh, builder of mine and general industrial cars and portable track, denies the report that its plant at Koppel, Pa., is to be closed down on account of the war in Germany. The company states that it has plenty of work for the next five or six months, and is receiving large orders for sugar cane and other industrial cars to be built here for shipment to South America, this business formerly having gone to its German works. The main office of this company is in Berlin, where it has 1500 office employees, and it maintains works in Russia, Germany, where it has 12 different plants, also in Hungary, Italy, Spain and Belgium.

The Driggs-Seabury Ordnance Company, Sharon, Pa., states that it has recently laid off about 400 men in its light car department. Its force of between 400 and 500 men in the automobile parts department has not been seriously affected up to the present time.

The courts of Pittsburgh last week granted a charter to the United States Steel & Carnegie Pension Fund, an association to provide for pensions and benefits for employees of the United States Steel Corporation and the Carnegie Steel Company, their subsidiaries and successors. The business is to be transacted in Pittsburgh and the yearly income is not to exceed \$1,000,000.

The Youngstown Sheet & Tube Company has placed contracts with the Ayer & Lord Tie Company, Chicago, for 2000 sq. ft. of creosoted wood-block flooring to be used in its shipping department at Youngstown, Ohio. This order was placed after a test by the buyer which covered four years. An experimental platform was laid, half of concrete and half of creosoted blocks. After four years of service under equal conditions it was found the concrete was worn down from $\frac{1}{4}$ to $2\frac{1}{2}$ in. below the original surface, while the blocks showed very little wear.

The Petroleum Iron Works Company, Sharon, Pa., builder of heavy plate work, is operating its plant night and day with a large number of orders ahead. It is building oil tanks for Oklahoma, Mexico and California, and is now working on a contract for oil tanks for Oklahoma amounting to about \$1,000,000.

The Keystone Driller Company, Beaver Falls, Pa., recently made a shipment of drilling machinery on a German merchant ship which has been captured by the British and conveyed to Falmouth, where she is now held as a prisoner of war. The company states that the machinery is not contraband of war and not subject to confiscation. It is expected that when the proper time comes the equipment will be returned to the Keystone Company, as it is not believed that delivery to the purchasers will be allowed.

Manganese Ore Production in 1913

For commercial purposes materials containing manganese are separated into four classes. 1. Manganese ores, containing at least 35 per cent. of manganese. 2. Manganiferous iron ores, consisting of mixtures of manganese and iron oxides and hydrous oxides, having from one to five per cent., and sometimes more, manganese. 3. Manganiferous silver ores. 4. Manganiferous zinc residuum from which spiegeleisen is made. This classification is from a recent bulletin of the United States Geological Survey entitled "The Production of Manganese and Manganiferous Ores in 1913,"

	1910. (g)	1911. b 116 51 ...
Africa:		
Cape Colony.....		
<i>total</i>	51	...
Oceania:		
Australia.....	815	1,151
New Zealand.....	5	(h)

The production of ferromanganese in the United States in 1913 was 119,496 gross tons as compared with 125,378 tons in 1912 and 74,482 tons in 1911. Of spiegeleisen the production was 110,338 gross tons in 1913 as against 96,346 tons in 1912 and 110,236 tons in 1911.

The ferromanganese and spiegeleisen imported and entered for consumption is given as follows:

<i>Ferromanganese and spiegeleisen imported and entered for consumption, 1903-1913, in gross tons.</i>					
Year.	Ferromanganese.		Spiegeleisen.		Total.
	Quantity.	Value.	Quantity.	Value.	
1903	41,519	\$1,699,666	122,015	\$2,709,317	163,534
1904	21,813	707,037	4,623	132,461	26,436
1905	52,841	1,884,651	55,457	1,336,104	108,298
1906	84,359	1,953,644	103,268	2,942,940	3,220,785
1907	87,400	5,354,656	48,994	1,399,381	136,394
1908	44,624	1,860,664	4,579	125,054	49,203
1909	88,934	3,396,381	16,921	356,447	105,855
1910	114,228	4,341,071	25,383	489,019	139,611
1911	80,263	3,015,062	20,970	405,444	101,233
1912	99,137	3,906,920	1,015	28,094	100,152
1913	128,070	5,682,915	77	2,173	128,147
Total	843,188	36,802,667	403,302	9,926,464	1,246,490
					46,729,131

by D. F. Hewitt. Ferromanganese, 80 per cent., is made almost entirely from the ores in the first classification. According to the bulletin referred to, the production of manganese ore in the United States in 1913 was 4048 gross tons, a notable increase over that for 1912 (1664 tons) and the largest output since 1908 (6144 tons). It came almost wholly from the James River-Staunton River district of Virginia. The total output for the past 10 years was 37,904 gross tons.

Imports of manganese ore into the United States totaled 345,909 gross tons in 1913 as compared with 300,661 tons in 1912, distributed as follows:

<i>Imports of manganese ores into the United States, calendar years 1912-1913, by countries, in gross tons.</i>					
	1912.	1913.			
Country.	Quantity.	Value.	Quantity.	Value.	
Brazil	81,580	\$510,300	70,200	\$445,680	
Russia	83,334	490,306	124,337	712,324	
British India	128,645	644,162	141,587	710,024	
Cuba	2,021	25,071	1,114	12,578	
Netherlands	...	...	3	76	
Japan	3,245	70,844	2,014	103,612	
Germany	752	14,099	227	12,082	
United Kingdom	55	2,021	5	631	
Belgium	2	26			
All other countries	1,027	12,555	5,603	32,671	
Total	300,661	\$1,769,184	345,090	\$2,029,680	

This is an increase of approximately 15 per cent. from 1912 to 1913, almost wholly from Russia.

The following table gives the latest available statistics of the American and foreign production of manganese ore for 1910 and 1911, figures for 1912 not yet being available:

<i>Production of manganese ore in principal producing countries, 1910 and 1911, in gross tons.</i>		
Country.	1910.	1911.
North America:		
Canada	...	5
Nova Scotia	22	134
United States	2,258	2,457
South America:		
Brazil b	249,954	171,172
Europe:		
Austria	15,447	15,703
Bosnia and Herzegovina	3,937	3,543
France	7,874	5,906
German Empire	79,291	85,921
Greece	40	721
Hungary	13,061	14,523
Italy	4,134	3,460
Russia	o 394,405	c 572,028
Spain	8,471	5,519
Sweden	5,719	5,347
Turkey	e 12,008	(a)
United Kingdom	5,467	4,987
Asia:		
India	800,907	670,290
Japan	11,121	9,615
Portuguese India	(e)	(e)

aStatistics not yet available. bExports. cExported from Batum and Poti. dExported from Stratoni. eYear ending March, 1909. fQuantity not stated; value of production, \$19. gQuantity not stated; exports valued at \$18,609 in 1910 and at \$13,266 in 1911. hQuantity not stated; exports valued at \$7,786.

Proposed Charges for "Wasting" Slag and Ashes

C. E. E. Childers, joint agent of the Trunk Line Association, Park Building, Pittsburgh, has sent out a proposed tariff for the railroads that are members of the association, fixing the rates for the wasting of blast furnace slag, ashes and other refuse materials in carload lots when delivered to these railroads at stations in Ohio, Pennsylvania and West Virginia. It is proposed to make the following charges for wasting these materials in carloads, loaded into cars on private sidings:

1. Carriers will accept slag, flue dust, clean ashes, or refuse molding sand loaded into cars on private sidings of industries, for wasting for the plant at a charge of 29 cents per net ton.

2. Carriers will accept ashes (mixed with other refuse), brick-bats, dirt and other refuse material, loaded into cars on private sidings of industries, for wasting for the plant, at a charge of 35 cents per net ton.

3. The minimum weight per car will be 80 per cent. of the marked capacity of the car used, actual weight to be charged for if in excess of the minimum.

4. The foregoing will apply only on material in such forms that any single fragment can be unloaded by one man without the aid of derrick or other similar mechanical appliances. If material is delivered to the carriers for wasting, which cannot be so unloaded, the actual cost of unloading, but not exceeding \$25.00 per car, will be charged to the industry.

5. The charges enumerated above will be net to the carrier accepting the material for wasting. No allowance will be made out of the above charges for loading, switching or other terminal service.

For years it has been the custom of the railroads entering the Pittsburgh district, eastern Ohio and West Virginia to waste all slag and ashes without charge, and the proposal to make charges as set forth above may work considerable hardship to furnace and manufacturing plants in the districts affected. On the other hand, it is believed that a good many of the blast furnace and manufacturing plants will waste their own slag and ashes by using them for filling purposes, and when the railroads come to the blast furnaces and want to buy their slag and ashes for the same purposes, a charge will be made. Heretofore these materials have been furnished the railroads free. It is proposed to put the new freight rates into effect on September 15, 1914, and the tariffs have been submitted to the Interstate Commerce Commission for their approval. The railroads that propose to put these new tariffs in operation are the Baltimore & Ohio, Erie, Lake Shore & Michigan Southern, Pennsylvania, Pittsburgh & Lake Erie, Pittsburgh, Chartiers & Youghiogheny, Big Four, Pittsburgh, Lisbon & Western, Wheeling Terminal, and the Youngstown & Ohio River.

The works of the John A. Roebling's Sons Company at Trenton and Roebling, N. J., were not operated in the week beginning August 17. In the present week a part of the Trenton works only is in operation, but it is probable the entire plant will be operated next week.

The Machinery Markets

Machine tool builders are taking advantage of the check to business to lay plans for extending their trade over the seas. At the same time efforts are being made to find domestic substitutes for manufacturers and supplies for which this country has been dependent upon Europe. A genuine need of equipment and a perpetual application of selling force continue to give a steady flow of single tool orders and the like. Midsummer inactivity and the shutting off of normal markets have inevitably accentuated the general dullness of the trade everywhere. A canvass of a score of New England manufacturers showed a nearly unanimous belief in early benefit from the war abroad. At Chicago campaigns for direct solicitation of South American trade are being inaugurated. Local business amounts to but little, and this same condition is true of the Milwaukee district. In Detroit both the machine tool and foundry trades are unchanged. There is considerable inquiry and boilers especially are in demand. Jobbing foundries at Cincinnati are operating at 25 per cent. capacity. One local tool builder announces a large shipment of machine tools en route to Australia. In the Central South the lumber trade is hard hit by the closing of European markets. The South still awaits the financing and moving of the cotton crop. Until this is done little business is expected from this section. The sale of agricultural implements in the Birmingham region is developing weakness due to the upsetting of cotton shipping arrangements. Indications are that Texas is recovering from the recent depression. In St. Louis the machine tool trade is aptly described as "trimmed down to a whisper"; but affairs have long been arranged to face this condition. At San Francisco the opening of the Panama Canal and the accumulating needs of foreign lands are believed to be compelling factors to start a vigorous revival of trade. Business is good in the Pacific Northwest, where farming machinery is selling well; but industrial expansion here as elsewhere is held up pending the readjustment of business.

New York

NEW YORK, N. Y., August 26, 1914.

The local machinery market is very dull. This is largely because a considerable part of the business here is with the export trade. There is also a curtailment in domestic demand, especially from those manufacturers operating American branches of European concerns. With everything at hazard at home, agents here are not willing to go ahead, and so most are cutting down expenses in every possible way and many are shutting down factories. German branch houses are unable to do business with headquarters, even where communication is possible, as in many cases there is an one at the home office, every available man being under arms. Whether or not this portion of the domestic demand is permanently out of the market will be decided by coming events.

There is a little buying of railroad equipment. So far it amounts to the proverbial drop in the bucket. Some orders are being placed for a few tools; but nowhere is there record of an order notable either in size or value. Many machine tool makers are taking advantage of the lull in activity to plan campaigns for business, especially in the foreign fields.

The Schwartz-Herrmann Steel Works, Inc., 119-121 Nassau street, New York City, has been incorporated by Louis Schwartz, Carl F. Hermann and others, with a capital stock of \$300,000, to manufacture cold drawn tempered steel wires and hardened steel rolled shells for all purposes. It has constructed a complete plant at Floral Park, Somerville, N. J., fully equipped. Manufacturing operations will be started about October 15. Louis Schwartz is president, George H. Winters is works manager and Karl A. Herrmann is secretary and general manager. The company will specialize in razor steel and stamped goods from high grade tempered steels.

The Cooley Mfg. Company, Inc., has been incorporated with a capital stock of \$50,000, to take over the business of the Cooley Mfg. Company, 98 Park place, New York City. The latter company has been acting as manufacturers' agent and this will be continued together with the manufacture of a line of patented engine packings. Options have been taken on land at Newark, N. J., where a plant will be erected. Details as to the machinery requirements are not available at the present time.

John Graham, supervising architect, Ford Motor Company, Detroit, Mich., has drawn plans for an eight-story steel and concrete service building, 200x266 ft., to be erected at Long Island City, N. Y., at an approximate cost of \$600,000.

Baker & Grover, Newark, N. J., report the sale of the Goeller Iron Works, Frelinghuysen avenue, Newark, to the Splinter Electrical Company, 20 West Sixty-third street, New York City, who will move their Apple Electric Company division there from Dayton, Ohio. This plant will employ 200 skilled mechanics.

The Turner Construction Company has been awarded a general contract by the Hoboken Land & Improvement Com-

pany for the construction of a railway terminal loft building on the bulkhead of the Hudson River north of Fourteenth street and east of Bloomfield street, Hoboken. It will be 12 stories, 125 x 204 ft., reinforced concrete throughout. Work to go ahead at once. Charles Fall, 1400 Washington street, Hoboken, is the architect.

The Webster Loose Leaf Filing Company, Louisville, manufacturer of office devices, has obtained a plant at First and Essex streets, Harrison, N. J. Baker & Grover, Newark, N. J., negotiated the sale.

The Society for Establishing Useful Manufactures, 158 Ellison street, Paterson, N. J., has awarded the contract for the construction of a steam power plant 110 x 125 ft., one story, steel and brick construction, to the John W. Ferguson Company, United Bank Building, Paterson, at an estimated cost of \$45,890.

The Hard Mfg. Company, Buffalo, manufacturer of beds, etc., announces that the report that it will build a Canadian branch factory is not true.

The International Foundry Company, Syracuse, N. Y., has filed articles of incorporation with a capital stock of \$300,000 and will manufacture brake-shoes and other railroad appliances. W. S. Cummings, W. A. Steckel and F. E. Ehrgood, Syracuse, are the incorporators.

The E. R. Cadwell & Sons Brass Company, Syracuse, N. Y., has let the contract for the erection of a foundry and machine shop of steel and brick construction on West Lafayette street.

Preparation of plans for a sewage disposal plant have been authorized by the Intercepting Sewer Commission, Syracuse, N. Y., and they will be drawn by Glenn D. Holmes, the chief engineer.

Joseph A. Goulden, president of the board of trustees, New York State Soldiers and Sailors Home, Bath, N. Y., will receive bids until September 8 for two 125-hp. boilers.

Clynes & Leamy, Syracuse, N. Y., have received the contract for the construction of a power house for the Onondaga County Tuberculosis Sanitarium, to cost \$49,516.

The Columbian Mills Company, Minnetonka, N. Y., manufacturer of shade cloths, etc., has commenced work on additional mill buildings and a power plant of 12,000 hp., at a total estimated cost of \$500,000.

The Seneca Motor Car Company, Geneva, N. Y., has been incorporated to manufacture motor vehicles, etc., with a capital stock of \$25,000. The incorporators are A. Y. Lewis, G. M. Chase, Geneva, and C. E. Hamilton, Rochester.

The Robertson-Cataract Electric Company, Buffalo, has purchased a site at West Mohawk street and South Elmwood avenue on which it will erect a factory for the manufacture of electrical supplies and for the preparation of material for electrical construction work.

Plans are completed and bids will soon be taken for improvements and extensions to the waterworks system at Lakewood, N. Y., including a power house, 24 x 24 ft., two triplex pumps of 300 gal. per min. capacity each, a gasoline

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engine, etc. S. C. Bryan is president of the village board, Chapman & Graham, Jamestown, N. Y., are the engineers.

The Buffalo Meter Company, the Terrace and Genesee street, Buffalo, of which George B. Bassett is president, is having plans prepared by Lockwood Greene & Co., Boston, for a factory to be erected at Main street and the Erie Railroad.

The Buffalo Last Works, Inc., is moving to new factory quarters at Lock street and the "Terrace," Buffalo, with offices at 4 Lock street.

The Taber Pump Company, 262 Elk street, Buffalo, manufacturer of rotary pumps, has let the contract to the Western Building Company for the construction of its steel and brick foundry and machine shop, 117 x 145 ft., one story, and 38 x 195 ft., two stories, respectively.

A municipal electric lighting plant is to be built at Bath, N. Y. The power house and equipment will cost \$50,000. W. W. Babcock is chairman of the building committee.

D. W. Peck, Albany, state superintendent of public works, will soon receive bids for furnishing and installing chain hoists and additional guides for gate stems at the Delta Dam, Delta, N. Y., in replacement of present gate hoists.

The Eureka Cutting Machine Company, Hanover, Pa., has been incorporated by E. R. Haffelfinger and others to manufacture a machine for cutting out wall paper. A few machines will be built at the start, but the company has no plans for building or equipping a factory. Jacob Thomas, Newark, Del., is president, and E. R. Haffelfinger, vice-president.

New England

BOSTON, MASS., August 24, 1914.

While the machinery trade is dull, the manufacturers are practically unanimous in the belief that the outlook is very encouraging. They argue that the European war must have a direct favorable influence on American industries. They know that stocks of goods in this country are exceedingly low, which fact combines with that of the promised new trade, to lead to the deduction that production must increase from now on. The change will come slowly at first, and, after things have adjusted themselves, much more rapidly, until production is on a maximum basis.

The Hendey Machine Company, Torrington, Conn., manufacturer of lathes, milling machines and shapers, will hereafter handle the New England territory direct from the home office. The company's line has hitherto been handled by Manning, Maxwell & Moore. Outside of New England the Hendey machines will be carried by dealers in the various centers of distribution.

The William H. Haskell Mfg. Company, Pawtucket, R. I., manufacturer of bolts, nuts and other cold-punched products, has just completed large additions to its plant, consisting of a two-story building, 65 x 175 ft., and a one-story building, 85 x 175 ft. The new manufacturing space will be equipped with such modern machinery as will enable the company to improve the quality of its products, and room is furnished for future extension of the business. The management of the company has recently been reorganized. John A. Arnold is president; Wharton Whitaker, vice-president; J. Milton Payne, treasurer; Bruce H. Rittenburg, general manager; E. Shirley Greene, secretary, and Daniel Lewis, factory manager. Mr. Arnold and Mr. Payne are connected with various industries in and around Pawtucket. Mr. Whitaker has been the general sales manager for a large corporation in a similar line of business and Mr. Lewis has been superintendent of a plant of the same description. Mr. Rittenburg has been connected with the production and cost department of the Aluminum Company of America, Pittsburgh, Pa.

The Hamilton Mfg. Company, Lowell, Mass., manufacturer of cotton goods, is making plans for the building of the second section of a weave shed which will ultimately have a length of 800 ft., four or five stories. The work which will be done at present entails the expenditure of \$500,000 for building and equipment.

The Glenwood Company, Hartford, Conn., has sold its building to Bishop White, vice-president of the reorganized Pratt & Cadby Company, who will rent the premises for manufacturing purposes.

The Pilling Brass Company, Waterbury, Conn., has prepared plans for a factory building, 52 x 111 ft., one story and basement.

The Trumbull Electric Company, Plainville, Conn., has started the erection of an addition to its factory, 60 x 100 ft.

The statement that the Woonsocket Machine & Press Company, Woonsocket, R. I., will discontinue the building of cotton machinery is wholly without foundation. No change in this line will be made. However, a portion of

the shop will be devoted to the building of printing machinery and presses for the United Printing Machinery Company, Boston, Mass., the factory of which is now located in a suburb of Boston.

The plant and business of the R. Bliss Mfg. Company, Pawtucket, R. I., have been acquired by Joseph H. O'Neill, Jr. The factory has been closed down most of the time since last fall, following the dissolution of the Hardware & Woodenware Mfg. Company, New York, of which it was a branch. Manufacturing will begin immediately, with wood screws and wood hardware specialties as the product.

The Penn Metal Company, 201 Devonshire street, Boston, Mass., states that no definite plans have been made for the erection of the new factory buildings at Cambridge.

The Excelsior Needle Company, Torrington, Conn., has prepared plans for a three-story factory, 52 x 253 ft., which will be in addition to an already large plant.

Chicago

CHICAGO, ILL., August 24, 1914.

The temporary slump which still holds the Western machinery market in its grip is causing the machine-tool interests to undertake aggressive measures for securing business in new fields. Direct mail solicitation of South American business, presenting the features and advantages of our machinery and printed in Spanish and Portuguese, are being sent out. Effort is being made also in the development of American manufactures along lines in which we have been dependent upon Europe. The Illinois Manufacturers' Association is organizing a Foreign Trade Reference Bureau through which letters will be mailed to all members asking them to report at once the products which can no longer be secured for manufacturing purposes. Definite steps are to follow for devising substitutes to be made in this country or to be secured from other sources that may be discovered. Domestic demand for tools through the ordinary channels is well nigh at a standstill.

The Albert A. Arnold Paper Box Company, 1360 West Division street, Chicago, has had plans prepared for a four-story paper box factory, 137 x 150 ft., to replace the plant recently burned.

The Lawndale Iron & Wire Works, Chicago, has been incorporated with a capital stock of \$2500 to buy and sell structural and ornamental iron and steel. Incorporators are M. A. Milkewitch, Israel B. Perlman, 155 North Clark street, and Isadore Goodman.

The Excelsior Cornice Company, Chicago, has been organized with a capital stock of \$25,000, to manufacture ornamental sheet metal work, by J. Arthur Johnson, James T. Fales and Luther D. Swanstrom, 69 West Washington street.

The Service Motor Supply Company, Chicago, has been organized with a capital stock of \$5000 to conduct a general automobile business. Organizers are Gus C. Aucutt, 512 Lincoln Park boulevard; Samuel H. Silverman, and H. F. Walbaum.

The Safety Fender Company, Chicago, has been incorporated with a capital stock of \$50,000 to manufacture and sell safety fenders. Incorporators are Joseph Mahone, Thomas Kane and Walker F. Butler, 2133 South St. Louis avenue.

The Dashiell Motor Company, Chicago, has been incorporated with a capital stock of \$25,000 to manufacture, repair, and buy and sell motor vehicles of every kind and their accessories, also mercantile specialties and to acquire and sell letters patent. Incorporators are C. R. Dashiell, Emil C. Wetten and Charles H. Pegler, 108 South LaSalle street.

The Southern Illinois Motor & Lumber Company, DuQuoin, Ill., has been organized with a capital stock of \$25,000 to do a general automobile and lumber business. Organizers are J. H. Ward, R. W. Eddleman, R. C. Eaton, George W. Dowell and W. E. Rutledge.

The Rudolph Shoe Machinery Company, Streator, Ill., has been incorporated with a capital stock of \$25,000 to manufacture and sell machinery, to acquire letters patent of the United States and any foreign country, etc. Incorporators are Carlos Ames, R. H. Rudolph and W. C. Jones.

The Kind Light Company's plant at Peoria, Ill., was destroyed by fire with an estimated loss of \$35,000.

The Illinois Metals Company, Plano, Ill., has increased its capital stock from \$10,000 to \$30,000.

The Rotary Hay Press Company, Decatur, Ill., has been incorporated with a capital stock of \$100,000 by Jolly James, Charles F. Cooper and J. W. Jolly to manufacture hay presses.

The D. A. Laros & Sons Company, Grinnell, Iowa, manu-

turer of buggies, carriages, etc., has started to rebuild its factory, which was destroyed by fire. It expects to have the new factory completed by December 1.

The Kinyoun Mfg. Company, Thirtieth street and Broadway, Council Bluffs, Iowa, has been recently incorporated with a capitalization of \$50,000, by H. B. Kinyoun and others, and has purchased the business of The Eureka Egg Carrier Company, Omaha, Neb., manufacturer of sheet metal egg carriers. Its new plant will be in operation shortly. The present equipment includes punch presses, etc. Later on other machinery will probably be added.

John E. Hufford, Wayne, Neb., has purchased the assets of the Radio-Round Incubator Company. Its recently remodeled factory has been destroyed by fire August 12. Plans and specifications have been drawn for a new building, to be erected immediately, but it will not be ready for use for several months. Machinery requirements are therefore held in abeyance.

The Novelty Iron Works, Dyersville, Iowa, has been incorporated with a capital stock of \$75,000 by J. T. Sudmeier, J. J. Stockemer and James Armstrong, Dyersville, and J. E. and C. L. Armstrong, Waterloo, Iowa, to manufacture power hammers, shears, punches, shingle making machinery, hardware specialties, steel fence posts, etc. It will build a factory about 80 x 160 ft. Plans are at present incomplete.

The Chicago & Northwestern Railroad is planning the construction of a 180-car capacity repair yard at Clinton, Iowa, to cost about \$80,000. This will include a planing mill, car shop, store building of brick construction and frame lumber shed.

The works of the Minnesota Tank Company, Minneapolis, Minn., was seriously damaged by fire with an estimated loss of \$20,000.

The Northern Pacific Railway Company is planning a roundhouse and repair plant, to cost \$500,000, at St. Paul, Minn., for which considerable machinery will be needed.

Milwaukee

MILWAUKEE, Wis., August 24, 1914.

The past week there have been some small purchases of machine tools and machinery builders are doing active bidding on considerable municipal work, but on the whole things are quiet and buying continues to be spotted and of the hand-to-mouth character. One of the most encouraging features of the present situation is the serenity of the labor conditions in metal-working and other shops. Employers say that the period of quiet among workmen is exceeding all records and attribute this condition to the fact that employment has been uncertain for a good many months and employees are satisfied to let well enough alone. There are none who believe things will become any worse, and all seem confident that improvement must come soon. Pay rolls are increasing slowly and the lay-off period has ended. Short hours are still the rule in some shops, but these are gradually working back to normal working schedules.

The West Bend Aluminum Company, West Bend, Wis., which has just moved into its new fireproof factory, which is 30 x 250 ft., has started work on another building 40 x 75 ft., to accommodate shipping and stock departments. The company is building up a large South American export trade on kitchen utensils and is not concerned about European trade.

The Green Bay Barker Company, Green Bay, Wis., manufacturing pulpwood barkers and special pulp-mill machinery, is suffering heavily as the result of the European war, as the largest share of its business is export trade. Large shipments to Finland and other forest countries of Europe are being held up at New York. Operations have not been suspended and efforts are being made to create an American market of larger proportions to absorb the production.

The city of South Milwaukee, Wis., has sold an issue of \$10,000 school bonds and will proceed with plans for a high school building and manual training school. H. Franke is mayor.

The Common Council of Oconomowoc, Wis., has voted to construct a 12-in. cast-iron pipe intake into Lake LaBelle, and a pipe line 12 in. in Locust street to the 200-acre site purchased recently by the Pacific Coast Condensed Milk Company, Seattle, Wash., for its proposed \$125,000 plant at Oconomowoc.

The county of Milwaukee on August 20 succeeded in disposing of its \$600,000 bond issue for the construction of a new house of correction group, including three complete machine shops for convict labor. Bids for the construction work were closed by Louis G. Widule, county clerk, on August 20, but the contract will not be awarded until late this week because of the great amount of work involved in scheduling tenders. Leenhouts & Guthrie, Milwaukee, are the architects.

Indianapolis

INDIANAPOLIS, IND., August 24, 1914.

The National Motor Vehicle Company, Indianapolis, has purchased property, 140 x 246 ft., to be used as a site for an extension to its plant. Arthur C. Newby is president.

The Frigifax Mfg. Company, Lafayette, Ind., has been incorporated with \$50,000 capital stock to manufacture ice machines. The directors are J. E. Chamberlin, W. A. Klepper and E. W. Luckett.

The Skillman Electric Company, Indianapolis, has been incorporated with \$10,000 capital stock to manufacture and deal in electrical supplies. The directors are G. L. Skillman, C. V. Higgins and E. W. Skillman.

The Modern Electric & Machine Company, Indianapolis, has been incorporated with \$5000 capital stock to manufacture electrical devices. The directors are Louis H. Knue, H. W. Ransdall and Theodore A. Meyer.

Jackiel W. Joseph has been appointed receiver for the Globe Machinery Company, Indianapolis.

The Wabash Specialty Company, Wabash, Ind., has been incorporated with \$15,000 capital stock to manufacture furniture and other specialties. The directors are G. J. Snideman, F. H. Henley and L. J. Fox.

In *The Iron Age*, issue of August 20, an item appeared regarding the St. Paul Pulley Works, Ft. Wayne, Ind. This is in error as the name is the Paul Pulley Works. Henry C. Paul is president.

The Hanover Light & Power Company, Hanover, Ind., has been incorporated with \$2500 capital stock to furnish electric light and power. The directors are James C. Reed, P. Sample and I. A. Reed.

The Berne Electric Light Company, Berne, Ind., has increased its capital stock \$24,000.

The Parr Auto Shoe Company, Franklin, Ind., has been incorporated with \$10,000 capital stock to manufacture auto supplies. The directors are W. A. Parr, G. E. Parr and William Feathersgill.

The H. Paul Prigg Company, Converse, Ind., will build a factory for the manufacture of cycle cars.

The Bennighof-Nolan Company, Evansville, Ind., has been incorporated with \$10,000 capital stock to manufacture automobiles. The directors are B. P. Bennighof, J. J. Nolan and V. F. Nolan.

The Step Ladder Ironing Board Company, Vincennes, Ind., has been incorporated with \$10,000 capital stock to manufacture domestic articles. The directors are F. C. Morgan, O. D. Rogers and J. N. Thompson.

Detroit

DETROIT, MICH., August 24, 1914.

The local machinery market exhibits no decided change. There seems to be about the usual run of single tool sales and that is about all except some scattered orders for special equipment of various types. There is considerable inquiry before the trade but the prospective business is of small importance individually, and no large lists are reported. The demand for engines and boilers, particularly the latter, is more active. The range of the second-hand machinery market is limited and sales are closely confined to the smaller types of tools. Conditions in the foundry trade are unchanged, but several machine shops are receiving a somewhat better run of orders. Financial institutions are scrutinizing applications for loans very carefully and while there seems to be no lack of money for legitimate commercial purposes conditions are not such as to encourage new construction projects.

The Detroit Lumber Company, Detroit, has taken out a building permit covering the erection of a three-story building, 150 x 210 ft., to cost about \$45,000. It will be mainly used for manufacturing purposes.

The Wolverine Automatic Machinery Company, Detroit, has been incorporated with \$10,000 capital stock to manufacture machinery and tools. The incorporators are Louis E. Vanhoffman, Charles H. Smith and Leonard C. Weeks.

The board of public works, Detroit, has completed plans for the erection of a blacksmith shop and wagon shed. The building will be 38 x 103 ft., one story.

The Denby Motor Car Company, Detroit, which was recently organized to engage in the manufacture of automobile trucks, has acquired a factory at Franklin and Dubois streets.

The Flint Metal Specialty Company, Flint, Mich., has been organized by R. S. Gott, S. A. Allen and E. J. Vining. It will manufacture sheet metal automobile parts.

O. W. Schuerman, Detroit, architect, is preparing plans for extensive additions to the plant of the Frick Chickery Company, Kaw Kawlin, Mich. The buildings will comprise a boiler house, a foundry and a tool house, and will cost \$45,000, exclusive of equipment.

The sawmill of Jackson & Pindle, Pellston, Mich., was destroyed by fire, August 17, entailing a loss of \$50,000. Information as to the rebuilding of the plant is not yet available.

The Eagle Tannery Company, Rockford, Mich., is erecting an addition to its plant to cost \$20,000. The new building will be 80 x 103 ft., three stories.

A. H. Sebastine will erect an evaporating plant and broom factory at Scottville, Mich. The factory will be 50 x 50 ft., two stories. In addition a dry kiln, 20 x 27 ft., will be built.

The Central South

LOUISVILLE, Ky., August 25, 1914.

The machinery trade in this territory is generally slow. Few manufacturers or selling agents report much business in sight. The general complaint is that manufacturers are so much at sea as to the result of the war's developments that they are not in a mood to discuss improvements. One of the worst features from a local standpoint is the situation in the lumber business, which is the leading machinery using industry in this section. It has been hard hit by conditions which have practically eliminated the export market, and necessitated sharp curtailment. This means that little business may be expected from this source for some time to come. Building operations are going ahead nicely, however, and are giving boiler concerns work. The demand for electrical power equipment is mostly for small units.

Fire in the foundry of the O. K. Stove & Range Company, Louisville, August 21, did damage amounting to \$1500. Frank Ouerbacher may be addressed.

Neville, Kellner & Co., Louisville, have the contract for the heating and ventilating system to be installed in the Garland avenue school, Louisville. The cost of the equipment will be \$11,522.

The Ray Mfg. Company, Louisville, has been incorporated with \$20,000 capital stock for the purpose of manufacturing a device for high pressure steam boilers known as Ray's continuous feed water regulator. The company is to have the device manufactured by contract for the present, but will later establish its own plant. Frederick L. Ray, superintendent of motive power of the Louisville Railway Company, is president of the concern and inventor of the device.

William G. Probst, 1400 South Brook street, Louisville, former superintendent of the Louisville plant of the Standard Sanitary Mfg. Company, is planning the erection of a plant for the manufacture of plumbing supplies. As soon as the unsettled conditions growing out of the war are relieved active operations will be undertaken.

A contract has been let for the new power house of the Axtion-Fisher Tobacco Company, Louisville. The building will be 53 x 60 ft., of fireproof construction. Two 100-hp. boilers, an engine, generator, motor, etc., will be purchased.

A company is being organized at Whitesburg, Ky., for the establishment of an electric light plant. The James Clark, Jr., Electric Company, Louisville, is promoting the project.

T. W. Minton & Son, Barboursville, Ky., will establish a large wood-working plant. Dimension stock will be manufactured, and vehicle parts will be made.

The Perry Lumber & Supply Company, Hazard, Ky., has changed its name to the Hazard Lumber & Supply Company. It will install a planing-mill, for which power and wood-working machinery will be needed. The company has \$20,000 capital stock. J. L. Johnson is president.

H. Parsons, G. Gray and Ray Smith, Indianapolis, have purchased the garage of Frank Wheeler, Greencastle, Ind., and will install repair equipment.

The Erwin Water Company, Erwin, Tenn., is to install pumps with a capacity of 500 gal. per min. C. H. Jenks is the engineer in charge.

The Lannon Mfg. Company, Tullahoma, Tenn., which operates a tannery, has increased its capitalization from \$15,000 to \$50,000 and will likely add to its capacity.

The Cyphers Incubator Company, Memphis, Tenn., has plans for the establishment of a stock food factory which will represent an investment of \$75,000.

The Union Iron Works, Nashville, Tenn., has been incorporated with \$100,000 capital stock by W. T. Archer, H. B. Johnston, and others. As reported some time ago in *The Iron Age* it plans to manufacture a patented heater and other iron specialties.

The Nashville, Chattanooga & St. Louis Railway, Nashville, Tenn., has completed the installation of a large amount of electric power and special equipment, and plans the purchase of additional machinery. D. B. Carson is general manager.

The Tennessee Cooper Company, Ducktown, Tenn., which recently began large construction operations, including the building of an immense new power plant and an additional shaft house, has stopped construction work pending the adjustment of present international financial and industrial conditions.

Cincinnati

CINCINNATI, Ohio, August 24, 1914.

Domestic business with the machine-tool builders continues very quiet, with only a few scattering orders from the automobile manufacturers and railroads to report. However, attention may well be called to the fact that August is always a dull month with the domestic trade. The jobbing foundries are only averaging about 25 per cent. of activity. There is a slightly better demand for small electric drills and grinders both from domestic and export customers. One local firm reports quite a large shipment that is now en route to Australia.

The Art Joinery Company, Cincinnati, has let contract for a two-story brick building to be erected at Thirteenth and Clay streets. Nothing is known as to machinery requirements.

The Dalton Adding Machine Company, Norwood-Cincinnati, Ohio, has nearly finished the installation of machinery in its new factory at Norwood. Very little additional equipment will be required.

The Corcoran Lamp Company, Cincinnati, advises that the proposed addition to its plant will be for office and storage purposes, and that no machinery will be required.

The Central Motor Company, Hamilton, Ohio, has moved to a larger building at North Front and Market streets. An automobile repair shop is being fitted up in connection with its garage.

The United Paint Company, Middletown, Ohio, has been incorporated with \$100,000 capital stock and is having plans prepared for erecting a four-story factory. Particulars may be obtained from the Middletown Business Men's Club.

The Stivers High School, Dayton, Ohio, is fitting up a machine shop and foundry. Practically all equipment has been purchased.

Plans for the six-story reinforced concrete power building to be erected at Springfield, Ohio, have been completed and bids will be called for at an early date. E. L. Shuey, Dayton, Ohio, is the owner. The building is intended to house small manufacturing plants.

The Loveland Light & Water Company, Loveland, Ohio, has been incorporated with \$50,000 capital stock by Stanley Matthews and others. It will take over the present water-works plant at Loveland and make some additions to it.

Knowlton & Breinig, Athens, Ohio, have been awarded contract by the Ohio Board of Administration, Columbus, Ohio, for erecting a large laundry building at Gallipolis. Considerable equipment will be required.

The Dennison Sewer Pipe Company, Dennison, Ohio, has had plans prepared for an addition to its plant that will be 65 x 80 ft., two stories and of brick construction. Some additional machinery will be installed.

M. F. Albright, Carrollton, Ohio, and others plan the erection of a seven-kiln pottery, to cost about \$100,000. They are at present taking bids on engines, boilers, etc., and for a full line of pottery machinery, including clay mills, presses, pug mills, grinding cylinders, jiggers, agitators, sifters, etc.

Birmingham

BIRMINGHAM, ALA., August 24, 1914.

Business still lags in all lines and is especially dull in engines, boilers and pumps of large capacity. Machine tools are selling fairly well, garages being satisfactory consumers. The agricultural end of the business is reported as having developed weakness. It is a waiting game, with hope but no immediate prospect of betterment.

The plant of the Alabama & Gulf Portland Cement Company, Ragland, Ala., sold at receiver's sale, has been repurchased by G. Ransom Hartmann, Baltimore, Md., representing the creditors. It is proposed to improve the plant and renew operations.

The Ingalls Iron Works, Birmingham, will erect a skid-way and install other apparatus in its new plant.

The Columbia Power Company, Columbia, Ala., has been

incorporated with a capital stock of \$16,000 by R. D. Crawford, Nathan, Ala., and others, who intend to establish a lighting and power plant.

The Mobile Dredge Sleeve & Vulcanizing Company, Mobile, Ala., has been incorporated with a capital stock of \$10,000 by John L. Walker, Joseph G. Espalla, and others.

The Central Coal & Iron Company, Tuscaloosa, Ala., has plans for the electrification of its mining plants at Kellermin and Searles for the use of electric current furnished by the Alabama Power Company.

The Marengo Cotton Oil Company, Faunsdale, Ala., has been incorporated with a capital stock of \$7500 by John H. Minge and others, who will build a cotton-seed oil works.

The Chattanooga Gas & Coal Products Company, Chattanooga, has accepted a tract of land from the Chattanooga Chamber of Commerce at Altonpark, a suburb, upon the stipulation that it will establish there a plant for the manufacture of coke and by-products at an estimated cost of \$1,000,000. Lewis T. Wolle, chief engineer of the Durham Coal & Iron Company, Chattanooga, Tenn., is president. By terms of the agreement the plant must be completed by July 1, 1915, and construction work must be commenced on or before September 30 of this year. The Chattanooga Gas & Coal Products Company is composed of stockholders in the Durham Coal & Iron Company. The plant's daily production will be approximately 300 tons of foundry coke, 400,000 cu. ft. of lighting and fuel gas, 6,000,000 gal. of coal tar and 2000 lb. of ammonia.

Benjamin E. Houser, Bridgeport, Ala., is in the market for equipment to manufacture concrete blocks. A boiler will also be required.

The Lafayette Cotton Mills, Lafayette, Ga., is planning the installation of equipment to manufacture paper boxes for its own use. W. A. Nichols is in charge.

The Manier Slate Company, Atlanta, Ga., has been incorporated with a capital stock of \$50,000 by A. R. D. Lanier and A. Poole Maynard, Chattanooga, who will quarry and mine slate.

The Southern Wheel Company, St. Louis, will erect a \$60,000 building at its carwheel plant in Atlanta, Ga., and increase its manufacture of cast-iron carwheels.

The city of Columbus, Ga., will expend \$200,000 in the extension and improvement of the municipal waterworks plant.

Bids for the construction of a waterworks plant at Bay Minette, Ala., will be received up to September 30.

The Orlando Ice Company, Orlando, Fla., will establish a cold storage plant.

George W. Hyde, Crystal River, Fla., is equipping an automobile repair shop, and is in the market for lathes, drill presses, planers, etc.

The Hughes Artesian Well Company, Charleston, S. C., is in the market for a 30-hp. boiler, locomotive type, mounted on wheels, with open bottom and water front.

Texas

AUSTIN, TEXAS, August 22, 1914.

Although no money is coming in from the cotton crop, the machinery and tool trade shows indications of a revival from the depression which was plainly evident a week or so ago. Orders for irrigation pumping machinery are coming in and there promises to be unusual activity in that line of agricultural development during the next several months. The hopes that were entertained for an early settlement of the troubles in Mexico have been clouded by reports that counter revolutions are being fomented. Good rains have fallen all over Texas and crop conditions could not be better.

The Orange Refining Company, Orange, has been organized with a capital stock of \$50,000 for the purpose of building an oil refining plant. The incorporators are Erich F. Kuehne, A. Fischer and E. E. Townes.

The McDonald Concrete Company, Austin, will equip a plant for the manufacture of concrete building materials. J. P. McDonald is interested.

The Lawrence Electric Company, Galveston, has been organized with a capital stock of \$10,000. David Lawrence is one of the principals.

The Gulf Coast Gin Company, Kingsville, which has a capital stock of \$20,000, will install a gin. A. L. Kleberg is one of the owners.

The International Brick Company, which has been organized with a capital stock of \$200,000 will build a plant at El Paso for the manufacture of face brick, roofing tile, fireproofing material, hollow-tile, sewer pipe and other clay products. The company is a subsidiary of the Bricklayers,

Masons and Plasterers' International Union of America, and is to be operated on the co-operative plan. The officers of the company are William Bowen, Albany, N. Y., president; Thomas H. Freese, Chicago, vice-president, and William Dodson, Indianapolis, secretary. The main building will be of brick and steel construction.

S. L. Hodges, Stamford, will install an irrigation pumping plant for watering 300 acres of land on the Clear Fork of the Brazos River.

The Pittsburgh Steel Company, Frick Building, Pittsburgh, Pa., will transfer its storage warehouse and distributing depot from Galveston to Port Bolivar.

W. R. Berry, Salado, will equip a cotton gin.

The city commission, Dallas, will build a large municipal machine and repair shop. It will be completely equipped for various kinds of work.

A. Navel, Devine, and associates, will construct an electric light plant and ice factory.

John M. Williams, Bisbee, Ariz., and associates, will install pumping plants on shallow wells for the purpose of irrigating about 1500 acres of land near Florence, Ariz.

St. Louis

ST. LOUIS, MO., August 24, 1914.

The machine-tool business at this point has, to use the expression of a dealer, been "trimmed down to a whisper," but with it all every dealer in the market feels assured that as soon as the financing of the cotton crop, upon which this market in very large part depends, is settled, there will be decided activity, as it is known that there are needs and plans which only await stability of finances to be taken care of. In this connection it may not be amiss to mention that the banks and trust companies of St. Louis are preparing to handle a very large proportion of the surplus cotton through secured notes on cotton in warehouse passing from country customers to St. Louis wholesalers and manufacturers and thence into local bank. With this plan in operation it is expected that the St. Louis cotton area will be relieved from pressure and business put in measurably satisfactory condition. Dealers generally at this point are in good condition to endure the necessary wait, having been prepared by the practically complete readjustment of affairs which has been under way for the past two years.

The Thermo Automatic Stove Company, St. Louis, has been incorporated with a capital stock of \$10,000 by A. H. Kohlmeyer, Charles De Voto and J. E. Graves to manufacture fireless cookers, etc.

The Oxygen Gas Company, St. Joseph, Mo., has been incorporated with a capital stock of \$10,000 by Q. F. Brown, Albert Gels and Nicholas Beechler to equip a plant for the manufacture of oxygen.

The United States Publishing Company, Aurora, Mo., has been incorporated with a capital stock of \$300,000 by W. F. Phelps, Marvin Brown and C. I. Kenney to engage in the printing and publishing business.

The Western Dairy & Ice Cream Company, St. Joseph, Mo., has been incorporated with a capital stock of \$40,000 by August and John Fenner, and others, to equip a plant for a creamery and ice cream manufacture.

The Eagle Scale & Mfg. Company, Harrisonville, Mo., has changed its name to the American Scale Company and will remove its plant to Kansas City and enlarge it.

The Murray Construction Company, Poplar Bluff, Mo., has the contract for the construction of additional waterworks capacity at Charleston, Mo., and is reported in the market for oil-driven triplex pumps, hydrants, valves, cast-iron pipe, etc. Frank L. Wilcox, Syndicate Trust Building, St. Louis, is the engineer in charge.

The Marblehead Lime Company, Springfield, Mo., will rebuild its cooperage shop, destroyed recently.

The Dallas Cotton Gin Company, Selma, Ark., has been organized and will install ginning equipment at once.

A cotton gin of undetermined capacity is to be equipped at once at McGehee's, Ark., by Samuel Wolchansky, who is reported to have acquired the necessary site.

The Hanson Mill & Gin Company, Hanson, Okla., has been incorporated with a capital stock of \$16,000 by F. A. Moulden, John and Frank Faulkner and C. H. Burrow, and will equip a gin.

The Harjo Gravel Company, Oklahoma City, Okla., has been incorporated with a capital stock of \$30,000 by W. S. Guthrie, John Connolly and M. F. Highlet and will install a sand and gravel recovering plant.

A centrifugal pump of 14 in. with accessory equipment and a 60-hp. gasoline engine are reported wanted by Charles Kerr, Jackson, Miss.

A rotary dryer, about 40 ft. long, is reported sought by J. F. Coleman, Hibernia Building, New Orleans, La.

The Economic Power & Products Company, Yazoo City, Miss., has plans for the equipment of paper mills.

The city of Breaux Bridge, La., has decided upon the extension of both its electric light plant and its waterworks pumping plant. C. C. Rees is mayor.

The William Jordan Oil & Development Company, Alexandria, La., of which William Jordan, Boyce, La., is president, has plans for the expenditure of about \$300,000 on the development of oil and gas land at Quadrat, La.

The city of Baton Rouge, La., will receive bids until September 10 for equipment of an abattoir under plans to be obtained from John J. Mundiger, city clerk.

The city of Lecompte, La., of which S. H. Brewer is mayor, has completed plans for the installation of oil engines and pumping machinery in its waterworks plant. O. F. Reiszner is engineer.

San Francisco

SAN FRANCISCO, CAL., August 18, 1914.

Local machine-tool merchants report no change from the extreme dullness that has persisted for several months, orders for even single tools being rather scarce, while practically no large deals are going through. Buyers of nearly all kinds of machinery are holding off. The situation as regards large investment is little better than it was several months ago. Aside from general financial conditions, which tend to limit investment in mining, hydroelectric and other large development projects of a somewhat speculative nature, an important local cause of hesitation is the effort to restrict the working day to eight hours by popular vote at the coming election. The war also has a temporary retarding influence, though early relief is expected from the present difficulties of the export trade. Manufacturers believe that the Panama Canal and the war will open new opportunities for expansion. Many improvements have been well worked out on paper, but cannot be carried out until conditions are more settled.

The Yosemite Valley Railroad roundhouse and shops at Merced, Cal., were burned a few days ago, the loss including a number of machine tools.

The Los Angeles board of education will take bids for a lot of machinery August 24.

The Lindsay Packing House Company, Lindsay, Cal., has let a contract to the California Iron Works, Riverside, Cal., for orange packing machinery.

The Otis Elevator Company is putting up a new shop building on Beach street, near Stockton, this city.

The Solano Iron Works, Suisun, Cal., has been incorporated with a capital stock of \$10,000 by Thomas McEany, J. R. Hyde and C. A. Coggins.

According to a report from Los Angeles, the Lambert Mfg. Company, said to be connected with a firm in Anderson, Ind., has purchased a tract at El Segundo, near Los Angeles, and will build a plant for the manufacture of traction engines and implements. J. W. Lambert is president, and it is announced that S. J. Smith, of the Smith-Booth-Usher Company, Los Angeles, will manage the new plant.

Bids will be taken shortly for the construction of a foundry and forge building for the high school, Alameda, Cal.

Several manufacturing concerns are said to contemplate establishing plants in Oakland. Among them are the Harroun-Kessler Company, a manufacturer of mining machinery, and the Dibble Air Brake Company, Salt Lake City.

The Montebello Oil Company, Fillmore, Cal., is building a machine shop.

The Burbank Garage, Santa Rosa, Cal., is installing some new tools.

The American Rice & Alfalfa Company, Gridley, Cal., has sent an agent east to buy machinery for a rice milling plant.

The California Rice Milling Company, Biggs, Cal., is increasing its capacity from 700 to 1500 sacks a day.

The Midway Ice Company, just organized at Midway, Cal., by F. Carter and others, will install a 20-ton ice plant.

H. J. and F. T. Olson, Alhambra, Cal., are building a new planing mill.

The statement that the Urton Lake Land & Water Company will construct water storage dams and pumping plant near Ft. Sumner, N. M., at a cost of about \$1,775,000 for the purpose of reclaiming about 80,000 acres of land, is incorrect. According to Miguel A. Otero, Santa Fé, N. M., the president, the company has not at this time formed any plans for active operation.

The Pacific Northwest

SEATTLE, WASH., August 18, 1914.

Business conditions are reported good, although some uncertainty is felt about new ventures on account of the European war. The banking situation is sound, however, and plenty of money for new work is available. The wheat section of the country in eastern Washington has experienced ideal harvesting weather for the last few weeks, and the growers state if they can have another week of sunshine the entire crop will have been cared for. Seattle dealers have reaped a goodly harvest in the way of farm machinery. Much of the railroad work under contemplation in this section had been indefinitely postponed.

The Bellingham Broom & Woodenware Company, Bellingham, Wash., has been incorporated, with a capital stock of \$10,000, by E. M. Adams, F. A. Kirchner and Walter Kirchner. It is reported it will build a factory.

The Federal Machinery Company, Spokane, Wash., has been formed by T. N. Gilmore, W. J. Taggart and others with a capital stock of \$10,000.

W. L. Marrs, Coeur d'Alene, Idaho, has announced that plans are completed for the construction of an electric light plant in Culdesac, Idaho, where he was recently granted a franchise. The plant will supply the city of Culdesac and surrounding territory with light and power.

The Stetson-Ross Machinery Works, Seattle, has awarded to McRae Brothers, 1051 Empire Building, Seattle, the contract for the construction of a machine shop at 3204 First avenue, South.

The city of Eugene, Ore., will build a pumping plant in connection with the water system. C. W. Gelder is secretary of the water board.

The East Side Mill & Lumber Company, Portland, Ore., will make improvements to its plant, including the construction of a large sawdust conveyor across Spokane avenue.

The Portland Cordage Company, Portland, Ore., has been granted a permit to erect a factory at Fourteenth and Marshall streets.

The Lake Riley shingle mill, Oso, Wash., has been destroyed by fire. It was owned by Halterman & Stuchell, Oso, who state they will rebuild it.

J. A. Fear, manager of the Billings Tent & Awning Company, Billings, Mont., announces that it plans an addition to its factory and the installation of considerable new machinery.

P. Lavelle, Billings, Mont., is having plans prepared for enlarging his common brick plant, and installing machinery for turning out pressed brick. Bids for the work will be asked for soon.

The mill of the Bunker Shingle Company, Bunker, Wash., was completely destroyed by fire recently, with a loss of about \$25,000. John F. Laughran, Chehalis, Wash., the owner, states that it will be rebuilt immediately.

The Wheeler-Osgood Lumber Company, Tacoma, will build an addition to its mill at a cost of about \$6000. Machinery will be required.

The mill of the Potlatch Lumber Company, Bovill, Idaho, was destroyed by fire recently, with a loss of about \$100,000. Plans for rebuilding will be prepared at once.

The Mountain Timber Company, Kalama, Wash., whose sawmill was recently burned with a loss of \$300,000, has not formulated plans yet for rebuilding.

The Cascade Lumber & Shingle Company, Snohomish, Wash., has increased its capitalization to \$140,000. Considerable improvement work will be made to the plant, including the installation of machinery.

Western Canada

WINNIPEG, MAN., August 21, 1914.

The B. C. Tanning Company, Ltd., South Vancouver, B. C., has been incorporated with a capital stock of \$30,000 to erect a plant for the manufacture of leather, etc.

The Interior Elevator Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of \$130,000 by N. M. Paterson, J. S. Blair, George Saunders, and others, to build and operate grain elevators, etc.

The Western Woodenware, Ltd., Winnipeg, Man., has been incorporated with a capital stock of \$20,000 by Henry F. Tench, John F. Wallar, Leo J. Carey, and others, to manufacture hardware sundries, etc.

The Peace Valley Light & Power Company, Ltd., Peace River Crossing Alberta, has been incorporated with a capital stock of \$50,000.

The Wetaskiwin Tent & Bedding Company, Ltd., Wetaskiwin, Alberta, has been incorporated with a capital stock of \$20,000 to manufacture tents, beds, etc.

The Imperial Brass Mfg. Company, Harrison and Center streets, Chicago, has plans ready for the erection of a plant at Redcliff, Alberta, similar to its Chicago plant. It expects to carry on the building operations in spite of the war.

The city of Regina, Sask., will let the contract for the erection of the Western Broom Company's factory to the Watson-Burbridge Company, Regina. It is to be built in the industrial area by the city and will be sold to the Western Broom Company.

Norman L. Macdonald, manager of the Edmonton Shoe & Leather Company, Edmonton, Alberta, states that an eastern stove manufacturing company will establish a branch plant at Manchester, Alberta.

The Dunlop Pulp & Paper Company, Ltd., Selkirk, Man., which was recently incorporated with a capital stock of \$100,000 has had plans drawn for a pulp and paper mill which will cost about \$150,000. Construction work on the plant may be started this fall. F. A. Dunlop and T. McHattie, Winnipeg, Man., are among those financing the company.

The Denison Fireproofing Company, Mason City, Iowa, has secured a site at Estevan, Sask., and will erect a hollow brick plant there.

Work will start on the erection of a plant at Estevan, Sask., for the Eastern Clay & Pottery Company.

The ratepayers of Calgary, Alberta, passed a by-law to grant \$300,000 for extensions to be made to the municipal electric-light plant.

The Delcarle Boiler & Incinerator Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of \$20,000 to manufacture boilers, etc.

The Dissette MacConnell Lumber Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of \$25,000 to manufacture lumber, timber, etc.

The Pacific Motor Car Company, Vancouver, B. C., has been incorporated with a capital stock of \$25,000 to manufacture motor cars, etc.

The plant of the Cloverdale Brick & Tile Company, Cloverdale, B. C., was destroyed by fire recently, entailing a loss of \$30,000. It is stated the plant will be rebuilt at once.

The Victoria Glass & Bottle Company, Ltd., Victoria, B. C., has been incorporated with a capital stock of \$25,000. Officers of the company state they will erect a glass and bottle factory in Victoria.

Eastern Canada

TORONTO, ONT., August 22, 1914.

Joshua A. Hill, Essex, Ont., is in the market for machinery for the manufacture of motor cycles.

The Dominion Government, Marine and Fisheries Department, Ottawa, Ont., is about to purchase a marine boiler of about 200 hp. for Halifax, N. S.

Moirs, Ltd., Halifax, N. S., is considering the purchase of a 200-hp. horizontal boiler. C. Monahan is in charge.

J. R. Eaton & Sons, Orillia, Ont., will purchase wood-working machinery.

T. H. Collins, Simcoe, Ont., is about to purchase a complete sawmill equipment for a plant at South Middleton, Ont.

A \$300,000 addition to the Ford Motor Company's plant at Ford City, Ont., is to be erected at once. The new section will be of reinforced concrete, six stories, and 200 ft. square.

The Consumers Box & Lumber Company, Ernest Avenue, Toronto, will rebuild its plant at Grimsby, Ont., which was destroyed by fire.

The Central Ice & Storage Company, Windsor, Ont., will make additions to its factory to cost \$10,000. T. Z. Humphries is the architect.

The ratepayers of Bolton, Ont., passed a bylaw to issue bonds for the construction of a hydroelectric power plant. The Hydroelectric Commission, Toronto, will have charge of the work.

The Canada Furniture Mfg. Company, Ltd., Woodstock, Ont., has been incorporated with a capital stock of \$3,000, to manufacture furniture, etc. It has appointed John R. Shaw, Woodstock, Ont., to be its attorney.

The J. Edward Ogden Company, Ltd., Montreal, has been incorporated with a capital stock of \$25,000 by E. S. McDougall, D. P. Gillmor, G. R. Drennan, and others, to build engines, waterworks, etc.

The Caloroxide Corporation, Ltd., Morrisburg, Ont., has been incorporated with a capital stock of \$50,000 by G. F.

Johnston, Montreal; J. W. Allison, Leo Laurin, and others, to manufacture stoves, etc.

The Franco-American Chemical Company, Ltd., Montreal, has been incorporated with a capital stock of \$50,000 by G. A. Simard, Arthur Mignault, J. L. P. Lacasse, and others, to manufacture surgical instruments, etc.

The Parry Sound Barrel & Mfg. Company, Ltd., Parry Sound, Ont., has been incorporated with a capital stock of \$50,000 by Charles L. Sanford, John A. Johnson, John P. McKelvie, and others, to manufacture barrels, tubs, kegs, etc.

The Robinson Cabinet Mfg. Company, Ltd., Walkerville, Ont., has been incorporated with a capital stock of \$40,000 by H. S. Robinson, C. A. Rudkamp, J. J. Rukamp, and others, to manufacture baths and bath appliances, etc.

The Canadian Coil Company, Ltd., Walkerville, Ont., has been incorporated with a capital stock of \$40,000 by Sutherland Cuddy, Charles McHugh, Allan Klingensmith, and others, to manufacture spark and ignition coils and other electrical goods.

The Old Country Furniture Stores, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by Edward Islip, R. C. Hatfield, F. B. Edmunds, and others, to manufacture furniture, etc.

The Washington Burial Company, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by J. R. Fluery, B. R. Rapier, G. T. Walsh, and others, to manufacture undertakers' supplies, etc.

Hammell, Ryan & Harris, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by J. Aitchison, D. McArthur, J. O. Buckley, and others, to manufacture builders' supplies.

The Fairgrieve Metal & Stamping Company, Ltd., Toronto, has been incorporated with a capital stock of \$75,000 by Francis Watt, D. E. Dean, O. H. King, and others.

The Allen General Supplies, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by J. W. Bartlett, A. W. S. Roberts, N. R. Gooderham, and others, to manufacture machinery.

The Reid & Brown Structural Steel & Iron Works, Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by Mervil Macdonald, Geoffrey W. Adams, Bruce Williams, and others, to operate a foundry.

The Canadian General Fire Extinguisher Company has been incorporated with a capital stock of \$100,000 to manufacture fire extinguisher apparatus, etc. It has appointed Edward W. Wright, Toronto, to be its attorney.

The Doan Engineering Works, Trenton, N. S., will install a deep well pumping plant to cost \$25,000.

The Dominion Government has given an order to the Ross Rifle Company, Quebec, Que., for 30,000 rifles, 30,000 screw elevating sights and 30,000 bayonets, complete with scabbards, to be delivered before the end of this year. The price of each rifle complete is to be \$33.25.

A contract has been given the Canada Tool & Specialty Company, Ltd., New Glasgow, N. S., by the Dominion Government for the conversion of 10,000 long Ross rifles and the supply of 10,000 screw elevated sights and charger guide bridges. The company is to receive \$3.50 for each rifle so converted. The work is to be completed by April 1, 1915.

Catalogues Wanted

The Tillsonburg Electric Car Company, Tillsonburg, Ont., desires details or catalogues descriptive of 3½ or 4-ton motor trucks, left hand drive; also electric battery shop trucks of any capacity.

Government Purchases

WASHINGTON, D. C., August 24, 1914.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until September 8, schedule 7186, for one complete condensing plant for Annapolis; schedule 7195, for two 11½-hp. 120-volt direct-current motors, 930 rpm. and spare parts, for Brooklyn; until September 15, schedule 7206, for four portable geared pneumatic hoists of 6000 and 8000-lb. capacity, for Norfolk; schedule 7213, for one Scotch type internally-fired boiler for Gambrells, Md.; schedule 7218, for 15 portable electric hand drills, 125-volt, ½-in., to have two speeds, for Brooklyn; until September 22, schedule 7202, for two single-stage air compressors, equipped with vertical and two single-stage air compressors, equipped with automatic steam compressor governors, all four for Puget Sound; schedule 7236, for one refrigerating and ice-making plant, installed, for Gambrells, Md.

Bids were received at the Bureau of Supplies and Accounts, Navy Department, Washington, August 18, for furnishing supplies for the navy yards, as follows:

Schedule 7032, Yards and Docks, Class 2, Mare Island—One direct-current generating unit—Bid 35, informal; 50, \$1950 and \$2000; 66, \$1823; 71, informal; 165, \$1347.

Alternate—Same, f.o.b. works—Bid 50, \$1700 and \$1750; 66, \$1690; 165, \$1147.

Schedule 7034, Steam Engineering, Class 22, Puget Sound—Nine lathe chucks—Bid 16, \$318.84; 54, \$442.77; 76, \$387.60; 87, \$374.79; 99, \$333.93; 105, \$371.85; 137, \$368.49; 185, \$316.50; 203, \$312.21.

Schedule 7084, Ordnance, Class 71, Norfolk—One motor-driven broaching machine—Bid 4, \$1762.45; 96, units; 105, \$1710, \$1615, \$1700, \$1605, \$2025 and \$1930; 107, \$1752, \$1838 and \$1876; 134, \$1762.47.

Schedule 7085, Construction and Repair, Class 81, Brooklyn—One electrically-driven pipe expanding and flanging machine—Bid 98, \$9490.

The names of the bidders and the number under which they are designated in the above list, are as follows:

Bid 4, Aumen Machinery Company; 16, L. A. Benson; 35, Carroll Electric Company; 50, Diehl Mfg. Company; 54, Eccles & Smith Company; 58, Federal Sales & Service Company; 64, Frevert Machinery Company; 66, General Electric Company; 71, A. D. Granger Company; 76, Handlan Buck Mfg. Company; 87, Kemp Machinery Company; 96, Laponit Machine Tool Company; 98, Lovekin Pipe Expanding & Flanging Machine Company; 99, Manhattan Supply Company; 105, Manning, Maxwell & Moore; 107, Motch & Merryweather Machinery Company; 134, Prentiss Tool & Supply Company; 137, Puget Sound Machinery Company; 157, Frank T. Simmons; 165, B. F. Sturtevant Company; 185, Fred Ward & Son; 203, James T. Rawles Company.

Trade Publications

Gasoline Engines.—Canfield Gas Engine Company, Inc., 8 Abbott street, Binghamton, N. Y. Catalogue. Pertains to a line of gasoline engines which are made in a number of different sizes, from $\frac{1}{2}$ to 16 hp. These engines, which are one-half water and one-half air cooled, are built with two exhausts, one for taking the fire out of the cylinder and the other for the removal of the burnt gases. The advantages claimed for this type of construction are freedom from burnt valves, the necessity for regrinding valves is eliminated and the cost of the engine is reduced. Views are given of the various types of base, skid and truck mountings that can be supplied and of the different attachments that can be furnished for use with them.

Special Machinery, Cut Gears, Engines, Etc.—William Tod Company, Youngstown, Ohio. Collection of circulars. Contains illustrations and brief descriptions of various types of special machines, cut gears, rolling mill engines and condensers that have been built. Mention of a line of special castings and a hydraulic forging press is also made.

Special Machinery.—Torrington Mfg. Company, Torrington, Conn. Collection of photographs. Shows some of the various special machines built by the company for use in rolling and tube mills and wire drawing and cabling plants.

Non-Pulsating Pumps.—Luitwieler Pumping Engine Company, Rochester, N. Y. Pamphlet. Embodies a brief comparison of the operation of a cam-operated triplex pump with that of a triplex crank pump with views and drawings of the different styles of pumps that can be supplied. These pumps are designed for belt or motor drive for all classes of service, including boiler feed and deep well pumping, the latter type of pump being designed also for steam and gasoline engine drive. Mention is made of a double-acting sextuple pump which is the same as the company's regular double-acting triplex pump that was illustrated in *The Iron Age* May 8, 1913, with the addition of an extra water end.

Power Transmission Appliances.—Reeves Pulley Company, Clinton and Monroe streets, Chicago, Ill. Catalogue No. 7. Size, 6 x 8 in.; pages, 207. Gives general description and specifications for a line of modern appliances for the economic transmission of power, including pulleys of various types, hangers, clutch couplings, pillar blocks, etc. Tables of the various sizes of pulleys that can be supplied are given and mention is made of a variable speed transmission and lines of sprocket wheels and chains and spur and bevel gears. All of the devices are indexed very completely, so that it is a simple matter to locate any particular appliance that is desired.

Metal Sheets.—American Rolling Mill Company, Middletown, Ohio. Pamphlet. Describes and illustrates a line of metal roofing and siding that can be furnished in a number of different styles, either galvanized, painted or black. A discussion of why iron roofs resist rust is presented, followed by a brief description of the process of making the company's terneplate roofing. The remainder of the pamphlet is given over to illustrations and brief descriptions of the various forms of iron roofing and siding that can be

furnished, together with mention of shingles, eaves troughs, conductor pipe, elbows, gutters, ventilators, etc. A number of tables of useful information and a list of the products made from this company's iron sheets are included.

Metal Sheets.—Stark Rolling Mill Company, Canton, Ohio. Form 694. Treats of the use made of Toncan metal in the construction of buildings of various kinds, the story being told almost entirely by pictures of the different structures. These include the new Bureau of Engraving and Printing, Washington, D. C., industrial plants of all kinds, libraries, hotels, power houses, etc. In some cases testimonial letters are reproduced, in addition to the photographs.

Air Compressor Valves and Air Compressors.—Ingersoll-Rand Company, 11 Broadway, New York City. Two catalogues, Nos. 3024 and 3030. The former is a complete treatise on the Ingersoll-Rogler valve for air compressing cylinders and contains a brief historical statement of its development, followed by a description of its operation and advantages. The use of these valves in various types of compressors is briefly touched upon, the text being supplemented by a number of illustrations. The second catalogue covers the class ER-1 power-driven single-stage straight line air compressor, which is equipped with the Ingersoll-Rogler air valve. The field for which this compressor is designed is the small shop, the foundry and the power plant, and a complete description of the construction of the compressor is presented, together with illustrations of the various parts. The compressor is built in four standard strokes for capacities of 52 to 955 cu. ft. of free air per min. at pressures of from 10 to 125 lb.

Friction Clutches.—Moore & White Company, Philadelphia, Pa. Catalogue. Devoted to a line of friction clutches which are made in a number of different sizes. A brief description of the clutch is presented, together with instructions on its installation, adjustment and operation, followed by data on the horsepower rating of the clutches and extensive tables of the sizes which can be supplied. An illustrated list of the repair parts is given, together with the prices.

Enamelled Iron Signs.—Royal Enameling & Mfg. Company, 326 West Madison street, Chicago, Ill. Catalogue. Shows in concise and simplified form a few of the porcelain enamelled iron signs which this company has produced. These include street and advertising signs, together with a number of stock forms. A feature of the pamphlet is the reproduction of the signs in colors.

Rolled Steel Floor Plates.—Alan Wood Iron & Steel Company, Morris Building, Philadelphia, Pa. Folder. Illustrates and describes briefly a line of diamond and ribbed pattern rolled steel floor plates, for use where a secure foothold is desired. A table of the maximum sizes in which these floor plates can be supplied is given, together with one of their weights. Mention is also made of the blue annealed open-hearth soft steel sheets which this company is prepared to furnish in various widths and gauges.

Emery Wheel Dressers, Lathe Dogs and Pipe Cutters.—Collmer Brothers, South Bend, Ind. Pamphlet. Illustrates a number of different styles of cutters for emery wheel dressers and pipe cutters. In connection with the illustrations brief descriptions of the cutters are given. Tables of prices of the various parts of the pipe cutters are given, together with those of a number of other cutters that can be supplied. Mention is made of a line of lathe dogs.

Taps and Dies.—Winter Bros. Company, Wrentham, Mass. Catalogue No. 9. Concerned with a line of carbon and high-speed steel taps and dies. Data on the size of tap, speed of operation, lubrication, form of cutting edges and the various types of thread are presented, followed by illustrations with brief descriptions and tables of sizes for machinists' hand, nut, machine screw, tapper, pulley, short and long hob, straight and taper boller, stove and stay bolt and pipe taps and adjustable round, solid square and spring screw threading dies. The special taps and dies that can be supplied are also mentioned and a number of tables of useful information completes the catalogue.

Springs and Screw Machine Products.—Peck & Young Mfg. Company, Forestville, Conn. Card. Gives a few illustrations of the company's products, such as small, spiral and flat springs and screw machine products, up to a maximum diameter of $1\frac{1}{4}$ in.

Washers and Bridge Pin Nuts.—National Malleable Castings Company, Cleveland, Ohio. Circular No. 52. Relates to a line of malleable iron washers that are made in a number of different styles. A single page is given to each of the several kinds of washers covered, which include the plain type, with and without a nut lock slot, socket, floor, angle and spool washers, with a view of the particular style and a table of the sizes in which it can be regularly furnished. Mention is made of bridge pin nuts with a diagram of the dimensions and tables of stock sizes.

